

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	("5525126").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/09 17:32
S2	102511	esterification	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 10:56
S3	27822	transesterification	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 10:57
S4	129705	tin with oxide	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 10:57
S5	4812	S2 and S4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 10:58
S6	380625	fatty with acid	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:01
S7	1102675	alcohol	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:02

## EAST Search History

S8	28131	S2 and S6 and S7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:02
S9	2056	S8 and S4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:02
S10	166378	diesel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:03
S11	87	S9 and S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:14
S12	50	S11 not S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:22
S13	999498	ester	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:14
S14	4671361	prepare or make	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:15

## EAST Search History

S15	22968	S13 and S14 and S4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:15
S16	18496	S15 and S7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:15
S17	7528	S16 and S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:15
S18	6888	S17 not S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:16
S19	1468	biodiesel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:17
S20	5	S19 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 11:21
S21	55199	fatty same acid same alkyl same ester?	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06

## EAST Search History

S22	4671361	prepare or make	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06
S23	32959	S22 and S21	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06
S24	1102675	alcohol	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06
S25	31066	S23 and S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06
S26	41938	tin with catalyst	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:06
S27	1026	S26 and S25	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:07
S28	27822	transesterification	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:07

## EAST Search History

S29	853	S27 not S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:07
S30	9796	tin with oxide with catalyst	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S31	242	S23 and S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S32	186	S31 not S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S33	102511	esterification	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S34	129705	tin with oxide	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S35	380625	fatty with acid	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08

## EAST Search History

S36	28131	S33 and S35 and S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S37	2056	S36 and S34	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S38	166378	diesel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S39	87	S37 and S38	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S40	50	S39 not S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:08
S41	185	S32 not S40	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:13
S42	389931	fatty same acid	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:13

## EAST Search History

S43	5570	S22 and S42 and S24 and S26	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:13
S44	4748	S43 not S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:14
S45	1363	S44 and S33	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:14
S46	1339	S45 and ester	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 12:15
S47	10	"4567037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 14:50
S48	2	("20050080280").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/12 15:01
S49	0	("40567037").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/11/12 14:49

## EAST Search History

S50	0	"40567037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 14:49
S51	10	"4567037"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 14:49
S52	26448	fatty with acid with glycerides	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:29
S53	4671361	prepare or make	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:29
S54	15977	S53 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:29
S55	1923	S54 and tin	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:29
S56	129705	tin with oxide	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:30

## EAST Search History

S57	370	S54 and S56	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:30
S58	166378	diesel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:30
S59	35	S57 and S58	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/11/12 16:31

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NEWS 3	JUL 02	SCISEARCH	enhanced with complete author names
NEWS 4	JUL 02	CHEMCATS	accession numbers revised
NEWS 5	JUL 02	CA/CAplus	enhanced with utility model patents from China
NEWS 6	JUL 16	CAplus	enhanced with French and German abstracts
NEWS 7	JUL 18	CA/CAplus	patent coverage enhanced
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NEWS 18	SEP 13	FORIS	renamed to SOFIS
NEWS 19	SEP 13	INPADOCDB	enhanced with monthly SDI frequency
NEWS 20	SEP 17	CA/CAplus	enhanced with printed CA page images from 1967-1998
NEWS 21	SEP 17	CAplus	coverage extended to include traditional medicine patents
NEWS 22	SEP 24	EMBASE, EMBAL, and LEMBASE	reloaded with enhancements
NEWS 23	OCT 02	CA/CAplus	enhanced with pre-1907 records from Chemisches Zentralblatt
NEWS 24	OCT 19	BEILSTEIN	updated with new compounds
NEWS EXPRESS	19 SEPTEMBER 2007: CURRENT WINDOWS VERSION IS V8.2, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 19 SEPTEMBER 2007.		
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SESSION  
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0.21  
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FILE LAST UPDATED: 11 Nov 2007 (20071111/ED)

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=> s alkyl (2w) tin (2w) oxide  
599589 ALKYL  
6474 ALKYLS  
602507 ALKYL  
(ALKYL OR ALKYLS)  
292347 TIN  
677 TINS  
292770 TIN  
(TIN OR TINS)  
1811774 OXIDE  
351741 OXIDES  
1911053 OXIDE  
(OXIDE OR OXIDES)

=> s esterif?

=> s prepar? or making  
1828763 PREPAR?  
133838 PREP  
2315 PREPS  
135937 PREP  
(PREP OR PREPS)  
2125733 PREPD  
3 PREPDS  
2125735 PREPD  
(PREPD OR PREPDS)  
146687 PREPG  
9 PREPGS  
146695 PREPG  
(PREPG OR PREPGS)  
2858318 PREPN  
211276 PREPNS  
3017451 PREPN  
(PREPN OR PREPNS)  
5074334 PREPAR?  
(PREPAR? OR PREP OR PREPD OR PREPG OR PREPN)  
329233 MAKING  
35 MAKINGS  
329262 MAKING  
(MAKING OR MAKINGS)  
L3 5345836 PREPAR? OR MAKING

=> s fatty acid  
391500 FATTY  
14 FATTIES  
391504 FATTY  
(FATTY OR FATTIES)  
4474238 ACID  
1600215 ACIDS  
4978877 ACID  
(ACID OR ACIDS)  
L4 345927 FATTY ACID  
(FATTY (W) ACID)

=> s alcohol  
275046 ALCOHOL  
177549 ALCOHOLS  
418693 ALCOHOL  
(ALCOHOL OR ALCOHOLS)  
602599 ALC  
195064 ALCS  
700080 ALC  
(ALC OR ALCS)  
L5 867329 ALCOHOL  
(ALCOHOL OR ALC)  
75% OF LIMIT FOR TOTAL ANSWERS REACHED

=> 15 and 14  
L5 IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s 15 and 14

L6 43922 L5 AND L4

=&gt; s 13 and 16

L7 16983 L3 AND L6

=&gt; s 17 and 12

L8 1994 L7 AND L2

=&gt; s 18 and 11

L9 1 L8 AND L1

=&gt; d 19 ibib abs

L9 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:612439 CAPLUS

DOCUMENT NUMBER: 143:117808

TITLE: Improved process for preparing fatty acid alkyl esters using as biodiesel

INVENTOR(S): Gupta, Ashok Kumar; Bhatnagar, Ajay Kumar; Kaul, Savita

PATENT ASSIGNEE(S): Council of Scientific and Industrial Research, India

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005063954	A1	20050714	WO 2003-IN416	20031230
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2552371	A1	20050714	CA 2003-2552371	20031230
AU 2003290414	A1	20050721	AU 2003-290414	20031230
EP 1711588	A1	20061018	EP 2003-782777	20031230
R: AT, DE, FR, GB, IT				
BR 2003018651	A	20061128	BR 2003-18651	20031230
CN 1894390	A	20070110	CN 2003-80111007	20031230
IN 2004DN00397	A	20060310	IN 2004-DN397	20040220
PRIORITY APPLN. INFO.:			WO 2003-IN416	W 20031230

AB Fatty acid alkyl esters suitable for use as biodiesel are produced by a single step esterification of free fatty acids and transesterification of triglycerides from vegetable oils or animal fats or combinations thereof with a lower alc. (e.g. methanol) in presence of alkyl tin oxide as catalyst. Thus, such an improved process comprises the steps of, a. reacting fatty acid glycerides with an alc. having 1-4 carbon atoms in the molar ratio of 3:1 to 30:1 of fatty acids and triglycerides resp., at a temperature ranging

between 70-300°, pressure in the range of 1-30 bar, in presence of a organometallic catalytic compound of Tin with concentration of catalyst is in the

range of 0.01 to 3 weight percent of the fatty acid glycerides; b. obtaining ester with glycerol; c. separating the glycerin from the fatty acid alkyl ester as immiscible phase by decantation; d. purifying the fatty acid alkyl esters by washing with water, and e. washed ester is treated with an basic adsorbent to obtain biodiesel.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

FILE 'CAPLUS' ENTERED AT 12:24:43 ON 12 NOV 2007

L1 29 S ALKYL (2W) TIN (2W) OXIDE  
L2 134285 S ESTERIF?  
L3 5345836 S PREPAR? OR MAKING  
L4 345927 S FATTY ACID  
L5 867329 S ALCOHOL  
L6 43922 S L5 AND L4  
L7 16983 S L3 AND L6  
L8 1994 S L7 AND L2  
L9 1 S L8 AND L1

=> s tin

292347 TIN  
677 TINS  
L10 292770 TIN  
(TIN OR TINS)

=> s l10 and 18

L11 27 L10 AND L8

=> s l11 not 19

L12 26 L11 NOT L9

=> d l12 1-10 ibib abs

L12 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2007:533941 CAPLUS  
DOCUMENT NUMBER: 146:490440  
TITLE: Preparation of polyester for  
electrophotographic toner  
INVENTOR(S): Morimoto, Eiji; Aoki, Katsutoshi  
PATENT ASSIGNEE(S): Kao Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2007121455 A 20070517 JP 2005-310357 20051025  
 PRIORITY APPLN. INFO.: JP 2005-310357 20051025

AB The toner is prep'd. by the steps of (1) condensing divalent alc. compound (C) containing  $\geq 80$  mol% of bisphenol A-alkylene oxide adduct (D)  $[H(OR)xO(p-C_6H_4)CMe_2(p-C_6H_4)O(RO)yH]$ ; R = C<sub>2</sub>-3 alkylene; x + y = 1-4] and aromatic dicarboxylic acid compound (A) in the presence of Ti and/or fatty acid Sn ester catalyst, (2) adding aliphatic dicarboxylic acid to the reaction system and condensing, when the reaction ratio of (1) is  $\geq 90\%$ , and (3) adding  $\geq 3$ -valent polycarboxylic acid compound and/or polyalc. compound to the system, when the reaction ratio [total of (1) and (2)] is  $\geq 90\%$ , in which  $(50 - 0.15B) \leq A \leq (100 - 0.2B)$  is satisfied (A = mol% of A to C; B = mol% of bisphenol A-propylene oxide adduct to total D).  
 Electrophotog. toner containing the polyester is also claimed. The toner shows high transparency and odorless.

L12 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248084 CAPLUS  
 DOCUMENT NUMBER: 147:95307  
 TITLE: Catalytic esterification process for the preparation of completely esterified carboxylate esters of polyhydric alcohols  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar; Prakash, Om; Mathur, Gynesh Narain  
 PATENT ASSIGNEE(S): Director General, Defence Research & Development Organisation, India  
 SOURCE: Indian Pat. Appl., 26pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01486	A	20051125	IN 2003-DE1486	20031128
PRIORITY APPLN. INFO.:			IN 2003-DE1486	20031128

OTHER SOURCE(S): CASREACT 147:95307

AB An esterification process is described to provide for the prepn. of polyol esters by the esterification reaction of carboxylic acids and polyhydric alcs. in the presence of a metal oxide as the esterification catalyst. The polyol esters (e.g., pentaerythrityl tetraheptanoate) are prep'd. by heating an appropriate molar ratio of polyhydric alcs. (e.g., pentaerythritol) and C<sub>5</sub>-10 fatty acids (e.g., heptanoic acid) in the presence of high-boiling hydrocarbon solvents (e.g., toluene) and a main group metal oxide catalyst preferably in a lower valent state in a refluxing assembly fitted with a Dean-Stark assembly. The Dean-Stark assembly is used to observe the liberated amount of water during reaction, which helps to know the completion of the reaction with its quantity.

L12 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248073 CAPLUS  
 DOCUMENT NUMBER: 147:365175  
 TITLE: A process for the preparation of neutral diesters  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar;

PATENT ASSIGNEE(S) : Prakash, Om; Mathur, Gynesh Narain  
 Director General, Defence Research & Development,  
 India

SOURCE: Indian Pat. Appl., 15pp.  
 CODEN: INXXBQ

DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01379	A	20051125	IN 2003-DE1379	20031110
PRIORITY APPLN. INFO.:			IN 2003-DE1379	20031110

OTHER SOURCE(S) : CASREACT 147:365175

AB The present invention relates to a process for the prepn. of complete neutral diesters by the esterification reaction of acids and alcs. in the presence of a metal oxide as catalyst. The complete neutral esters are prep'd. by heating alcs. and fatty acids in the presence or absence of hydrocarbon solvents with a metal oxide catalyst which may belong to any one of the metals such as titanium, zinc or tin preferably in a reduced state with the system in a refluxing assembly fitted with a dean-stark assembly.

L12 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2007:98321 CAPLUS  
 DOCUMENT NUMBER: 146:324411  
 TITLE: Heterogeneous catalyst for polyvalent alcohol /fatty-acid esterification comprising an inorganic support, a catalyst activating compound and a catalytic activity improver and preparation method of ester compounds using the same  
 INVENTOR(S) : Chu, Jang Woo; Jung, Byung Duk; Lee, Myung Jin; Moon, Suk Young; Kim, Hyung Rok; Jeon, Jong Yeol; Ko, Eun Ah  
 PATENT ASSIGNEE(S) : Oh Sung Chemical Ind. Co., Ltd., S. Korea; Korea Research Institute of Chemical Technology  
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given  
 CODEN: KRXXA7  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Korean  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2006095075	A	20060830	KR 2005-15962	20050225
PRIORITY APPLN. INFO.:			KR 2005-15962	20050225

AB A method for prep. ester compds. in an economical and eco-friendly manner by maintaining low acidity and hydroxyl group ranges of a product using specific heterogeneous catalyst and reaction method, and skipping a conventionally required posttreatment process is provided. In a catalyst for esterification of polyvalent alcs. and fatty acids, a catalyst system for esterification comprises: (a) 100 weight parts of an inorg. support; (b) 5 to 20 weight parts of a catalyst activating compound in which tin (Sn) and titanium (Ti) are mixed in a mole ratio of 1:0.01 to 0.5; and (c)

0.5 to 2.0 weight parts of a catalytic activity improver containing nitrogen (N), phosphorous, or a mixture thereof. In the method for prep. ester compds. by esterification of polyvalent alcs. and fatty acids under the presence of a catalyst system, the prepn. method of ester compds. comprises performing esterification using a heterogeneous catalyst system for esterification comprising: (a) 100 weight parts of an inorg. support; (b) 5 to 20 weight parts of a catalyst activating compound in which tin (Sn) and titanium (Ti) are mixed in a mole ratio of 1:0.01 to 0.5; and (c) 0.5 to 2.0 weight parts of a catalytic activity improver containing nitrogen (N), phosphorous, or a mixture thereof.

L12 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:376970 CAPLUS  
 DOCUMENT NUMBER: 138:371678  
 TITLE: Method and apparatus for production of fuel from acid fats  
 INVENTOR(S): Piacentini, Aldo; Niesner, Rene  
 PATENT ASSIGNEE(S): GMK-Gesellschaft Fuer Motoren Und Kraftanlagen Mbh, Germany  
 SOURCE: PCT Int. Appl., 26 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040268.	A1	20030515	WO 2002-EP12536	20021108
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10155241	C1	20030703	DE 2001-10155241	20011109
CA 2466074	A1	20030515	CA 2002-2466074	20021108
AU 2002363345	A1	20030519	AU 2002-363345	20021108
EP 1448750	A1	20040825	EP 2002-802660	20021108
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 2004186307	A1	20040923	US 2004-775996	20040209
US 2007161809	A1	20070712	US 2007-690501	20070323
PRIORITY APPLN. INFO.:			DE 2001-10155241	A 20011109
			WO 2002-EP12536	W 20021108
			US 2004-775996	A1 20040209

AB Disclosed is a method for production of a fuel from acid vegetable or animal fats containing free fatty acids in catalytic esterification reactions. The fatty acids contained in the acid fats are esterified at a high temperature and in a vacuum with 1 or more multihydric alcs. in the presence of

solid neutral catalysts which are provided in a fixed bed inside the reaction system. The acid fats are guided in the reaction system downwards countercurrently to the flow of the alc. and a mixture containing alc. and water is withdrawn under the effect of the vacuum in the upper part of the reaction system. The method is simple and inexpensive. The invention also relates to a system for carrying out the method exhibiting the following characteristics: a tower apparatus comprising  $\geq L1$  fixed bed layer of the solid neutral catalyst, an inlet in the upper part of the tower apparatus for introduction of the acid fat, an outlet for withdrawal of the neutralized fat, an inlet in the lower part of the tower apparatus for feeding the alc. so that it flows through the fixed bed layer in a countercurrent to the fat to be treated, an outlet in the upper part of the tower apparatus from which a mixture containing water and alc. can be withdrawn by means of a vacuum device. The neutralized fat is suitable as a fuel for thermal power plants and large diesel engines.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:119296 CAPLUS  
 DOCUMENT NUMBER: 136:167561  
 TITLE: Process for the isolation of sterols from the residues of fatty-acid or methyl-ester production  
 INVENTOR(S): Schwarzer, Joerg; Gutsche, Bernhard; Wollmann, Gerhard  
 PATENT ASSIGNEE(S): Cognis Deutschland GmbH, Germany  
 SOURCE: Eur. Pat. Appl., 7 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1179536	A2	20020213	EP 2001-118218	20010728
EP 1179536	A3	20050608		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 10038442	A1	20020221	DE 2000-10038442	20000807
US 2002058827	A1	20020516	US 2001-923629	20010807
US 6956125	B2	20051018		

PRIORITY APPLN. INFO.: DE 2000-10038442 A 20000807  
 AB A process for obtaining sterols from the residue of fatty acid and/or Me ester production is characterized by: (a) in the residue on hand free fatty acids are esterified with a polyhydroxy or lower monohydroxy alc., after that (b) the mixture containing partial glycerides is alcoholized at 90 - 145° and a pressure of 2 - 10 bar over 2 - 20 mins with a lower alc. in the presence of a basic catalyst, (c) after the alcoholysis the excess lower alc. is distilled from the reaction mixture, (d) the alcoholysis catalyst as well as the included glycerin if necessary are separated, (e) the fatty acid ester is distilled from the mixture and (f) the bottoms containing sterol and remaining partial glycerides through a further alcoholysis at 115 - 145° and a pressure of 2 - 10 bars over 4 - 8 h leads to free sterol esters and fatty acid esters. Thus, the distillation residue from the

cleavage of soybean oil is treated with glycerin in the presence of tin isoctanoate at 215° and 7 mbar; the residue is then treated with MeOH containing NaOMe at 137° and 6 bar for 8 mins.; the Me esters are then distilled out; then residue is again treated with MeOH containing

NaOMe for 8 h at 120° and 5 bar; the methanol is then flash evaporated and the catalyst neutralized with citric acid; the product mixture is washed with H2O to give a product containing 7.5% free sterols and 0.04% bound sterols; the sterol mixture contains: 1.2% cholesterol, 1.8% brassicasterol, 23.1% campesterol, 15.3% stigmasterol, 48.9%  $\beta$ -sitosterol, 2.2%  $\Delta$ 5-avenasterol, 0.3%  $\Delta$ 7-avenasterol and 0.05% citrosadienol.

L12 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:265486 CAPLUS  
 DOCUMENT NUMBER: 134:267805  
 TITLE: Preparation of alkyd resins containing polyesters recycled from wastes for coatings  
 INVENTOR(S): Kawamura, Chicara; Ito, Kei; Yoshihara, Ichiro; Numa, Nobushige  
 PATENT ASSIGNEE(S): Kansai Paint Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 38 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001025309	A1	20010412	WO 2000-JP6981	20001006
W: CA, JP, KR, US RW: DE, FR, GB				
CA 2383654	A1	20010412	CA 2000-2383654	20001006
CA 2383654	C	20060103		
EP 1217023	A1	20020626	EP 2000-964715	20001006
EP 1217023	B1	20031210		
R: DE, FR, GB				
JP 3310661	B2	20020805	JP 2001-528472	20001006
TW 539697	B	20030701	TW 2000-89120876	20001006
US 6686399	B1	20040203	US 2002-69797	20020228
PRIORITY APPLN. INFO.:				
			JP 1999-286707	A 19991007
			JP 1999-288981	A 19991012
			JP 2000-14694	A 20000124
			WO 2000-JP6981	W 20001006

AB The transparent alkyd resin having free from foreign substances and filtration residues, is prep'd. by depolymg. a reclaimed polyester resin derived from terephthalic acid as a main starting material with a polyhydric alc. mixture comprising a tetrahydric or higher alc. and a trihydric or lower alc. in the presence of a depolymn. catalyst, and esterifying the depolymn. product with a polybasic acid and a fatty acid. Thus, 109 parts pentaerythritol was mixed with ethylene glycol 107, zinc acetate 1.5 and regenerated poly(ethylene terephthalate) 154 parts at 230°, reacted with 354 parts soybean fatty acid and 340 parts phthalic anhydride at 240° for 3 h, and diluted with 600 parts mineral spirit to give polymer with number average mol. weight 2900, acid value 9.5

mgKOH/g and hydroxy value 45 mgKOH/g, 154 parts of which was mixed with 0.5% cobalt naphthenate 0.6 and 12% zirconium naphthenate 2.5 parts, coated on a tin plate, curing at 20° and 60% RH, showing curing time 5 h and film hardness 25.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2000:68309 CAPLUS  
 DOCUMENT NUMBER: 132:127463  
 TITLE: Emollient esters based upon capryl alcohol and isostearic acid for dermatological compositions  
 INVENTOR(S): Fogel, Arnold W.  
 PATENT ASSIGNEE(S): Bernel Chemical Company, Inc., USA  
 SOURCE: PCT Int. Appl., 35 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000003680	A2	20000127	WO 1999-US15948	19990713
WO 2000003680	A3	20000330		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6126951	A	20001003	US 1998-115029	19980714
CA 2337227	A1	20000127	CA 1999-2337227	19990713
AU 9949949	A	20000207	AU 1999-49949	19990713
EP 1115478	A2	20010718	EP 1999-934029	19990713
EP 1115478	B1	20050119		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AT 287289	T	20050215	AT 1999-934029	19990713
ES 2237927	T3	20050801	ES 1999-934029	19990713
PRIORITY APPLN. INFO.:			US 1998-115029	A 19980714
			WO 1999-US15948	W 19990713

AB The present invention relates to a novel emollient compound capryl isostearate, which is obtained from capryl alc. and isostearic acid. These emollient compds. may then be used in dermatol. products for their unexpected characteristics and as silicone-free carbon based replacements for the volatile cyclomethicones. In certain aspects of the present invention, the inclusion of capryl isostearate in combination with a volatile silicone is contemplated. Thus, capryl isostearate was obtained by the esterification of isostearic acid with capryl alc. in the presence of tin oxalate or di-Bu tin oxide. A lotion was obtained from Hetester PHA (propylene glycol-isoceteth-3-acetate) 10.0, capryl isostearate 15.0, water (deionized) 73.7, Veegum 0.8, Keltrol 0.4, and preservative 0.1. Optional pulverized pigment formulations may be added to a lotion from about 0.5 to 15 parts pigment composition to about 85-99.5 parts of the above lotion.

L12 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:32085 CAPLUS  
 DOCUMENT NUMBER: 130:68131  
 TITLE: Method for preparing fatty acid esters with a reduced heavy metal content by using tetravalent tin esterification catalyst compounds and reduction and precipitation agents  
 INVENTOR(S): Falkowski, Juergen; Reuter, Erich; Wollmann, Gerhard; Schwarzer, Joerg  
 PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany  
 SOURCE: Ger., 4 pp.  
 CODEN: GWXXAW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19741913	C1	19981224	DE 1997-19741913	19970925
PRIORITY APPLN. INFO.:			DE 1997-19741913	19970925

AB Fatty acids esters with a reduced heavy metal content are prep'd. by conducting the (trans)esterification of fatty acid (esters) with alcs. using tetravalent tin compds. as esterification catalysts in the presence of reducing agents so that the tin ppts. as stannous compds. having little solubility. Thus, Me octanoate was transesterified with ethylene glycol in the presence of dibutyltin diacetate, the methanol was removed, hypophosphorous added, and the mixture filtered through clay and a filter agent to produce a glycol ester product having hydroxyl value 3, acid value 0.1, and residual tin content 2 ppm.

L12 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1996:319146 CAPLUS  
 DOCUMENT NUMBER: 125:9183  
 TITLE: Production of tocopherol concentrates from vegetable oil byproducts by an esterification /distillation process  
 INVENTOR(S): Barnicki, Scott D.; Sumner, Charles E., Jr.; Williams, H. Chip  
 PATENT ASSIGNEE(S): Eastman Chemical Company, USA  
 SOURCE: U.S., 17 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5512691	A	19960430	US 1994-334901	19941107
ZA 9509433	A	19960515	ZA 1995-9433	19951107
CA 2203550	A1	19960517	CA 1995-2203550	19951107
WO 9614311	A1	19960517	WO 1995-US14612	19951107

W: AU, BR, CA, CN, CZ, HU, JP, MX, RU, SK, UA

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
AU 9641530	A 19960531	AU 1996-41530	19951107
EP 790990	A1 19970827	EP 1995-939870	19951107
EP 790990	B1 20010620		
R: DE, ES, FR, GB, IT, NL, PT			
BR 9509626	A 19980106	BR 1995-9626	19951107
CN 1171106	A 19980121	CN 1995-196967	19951107
JP 10508605	T 19980825	JP 1995-515525	19951107
ES 2157350	T3 20010816	ES 1995-939870	19951107
PT 790990	T 20010928	PT 1995-939870	19951107
PRIORITY APPLN. INFO.:		US 1994-334901	A 19941107
		WO 1995-US14612	W 19951107

AB An improved process is described for the prepn. of tocopherol concs. from vegetable oil distillates. Tocopherol concs. are obtained containing 20-80% tocopherol by weight, with an overall recovery of tocopherol of 72-97%. The process is comprised first of an esterification reaction where the more volatile alcs. are converted to their less volatile fatty acid esters, followed by a series of distillation steps where components boiling higher and lower than the tocopherols are separated from tocopherols and other like boiling substances. Advantages of the process are that tocopherol concs. are produced efficiently and economically in a min. number of steps without the use of solvents and with a relatively small capital investment.

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L12 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:533941 CAPLUS  
 DOCUMENT NUMBER: 146:490440  
 TITLE: Preparation of polyester for  
 electrophotographic toner  
 INVENTOR(S): Morimoto, Eiji; Aoki, Katsutoshi  
 PATENT ASSIGNEE(S): Kao Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007121455	A	20070517	JP 2005-310357	20051025
PRIORITY APPLN. INFO.:			JP 2005-310357	20051025

AB The toner is prep'd. by the steps of (1) condensing divalent alc. compound (C) containing  $\geq 80$  mol% of bisphenol A-alkylene oxide adduct (D)  $[H(OR)xO(p-C_6H_4)CMe_2(p-C_6H_4)O(RO)yH]$ ; R = C<sub>2</sub>-3 alkylene; x + y = 1-4] and aromatic dicarboxylic acid compound (A) in the presence of Ti and/or fatty acid Sn ester catalyst, (2) adding aliphatic dicarboxylic acid to the reaction system and condensing, when the reaction ratio of (1) is  $\geq 90\%$ , and (3) adding  $\geq 3$ -valent polycarboxylic acid compound and/or polyalc. compound to the system, when the reaction ratio [total of (1) and (2)] is  $\geq 90\%$ , in which (50 - 0.15B)  $\leq A \leq (100 - 0.2B)$  is satisfied (A = mol% of A to C; B = mol% of bisphenol A-propylene oxide adduct to total D). Electrophotog. toner containing the polyester is also claimed. The toner

shows high transparency and odorless.

L12 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248084 CAPLUS  
 DOCUMENT NUMBER: 147:95307  
 TITLE: Catalytic esterification process for the preparation of completely esterified carboxylate esters of polyhydric alcohols  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar; Prakash, Om; Mathur, Gynesh Narain  
 PATENT ASSIGNEE(S): Director General, Defence Research & Development Organisation, India  
 SOURCE: Indian Pat. Appl., 26pp.  
 CODEN: INXXBQ  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01486	A	20051125	IN 2003-DE1486	20031128
PRIORITY APPLN. INFO.:			IN 2003-DE1486	20031128

OTHER SOURCE(S): CASREACT 147:95307

AB An esterification process is described to provide for the prepn. of polyol esters by the esterification reaction of carboxylic acids and polyhydric alcs. in the presence of a metal oxide as the esterification catalyst. The polyol esters (e.g., pentaerythrityl tetraheptanoate) are prepnd. by heating an appropriate molar ratio of polyhydric alcs. (e.g., pentaerythritol) and C5-10 fatty acids (e.g., heptanoic acid) in the presence of high-boiling hydrocarbon solvents (e.g., toluene) and a main group metal oxide catalyst preferably in a lower valent state in a refluxing assembly fitted with a Dean-Stark assembly. The Dean-Stark assembly is used to observe the liberated amount of water during reaction, which helps to know the completion of the reaction with its quantity.

L12 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248073 CAPLUS  
 DOCUMENT NUMBER: 147:365175  
 TITLE: A process for the preparation of neutral diesters  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar; Prakash, Om; Mathur, Gynesh Narain  
 PATENT ASSIGNEE(S): Director General, Defence Research & Development, India  
 SOURCE: Indian Pat. Appl., 15pp.  
 CODEN: INXXBQ  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01379	A	20051125	IN 2003-DE1379	20031110
PRIORITY APPLN. INFO.:			IN 2003-DE1379	20031110

OTHER SOURCE(S): CASREACT 147:365175

AB The present invention relates to a process for the prepn. of complete neutral diesters by the esterification reaction of acids and alcs. in the presence of a metal oxide as catalyst. The complete neutral esters are prep'd. by heating alcs. and fatty acids in the presence or absence of hydrocarbon solvents with a metal oxide catalyst which may belong to any one of the metals such as titanium, zinc or tin preferably in a reduced state with the system in a refluxing assembly fitted with a dean-stark assembly.

L12 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2007:98321 CAPLUS

DOCUMENT NUMBER: 146:324411

TITLE: Heterogeneous catalyst for polyvalent alcohol /fatty-acid esterification comprising an inorganic support, a catalyst activating compound and a catalytic activity improver and preparation method of ester compounds using the same

INVENTOR(S): Chu, Jang Woo; Jung, Byung Duk; Lee, Myung Jin; Moon, Suk Young; Kim, Hyung Rok; Jeon, Jong Yeol; Ko, Eun Ah

PATENT ASSIGNEE(S): OH Sung Chemical Ind. Co., Ltd., S. Korea; Korea Research Institute of Chemical Technology

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given  
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2006095075	A	20060830	KR 2005-15962	20050225
PRIORITY APPLN. INFO.:			KR 2005-15962	20050225

AB A method for prep'g. ester compds. in an economical and eco-friendly manner by maintaining low acidity and hydroxyl group ranges of a product using specific heterogeneous catalyst and reaction method, and skipping a conventionally required posttreatment process is provided. In a catalyst for esterification of polyvalent alcs. and fatty acids, a catalyst system for esterification comprises: (a) 100 weight parts of an inorg. support; (b) 5 to 20 weight parts of a catalyst activating compound in which tin (Sn) and titanium (Ti) are mixed in a mole ratio of 1:0.01 to 0.5; and (c) 0.5 to 2.0 weight parts of a catalytic activity improver containing nitrogen (N), phosphorous, or a mixture thereof. In the method for prep'g. ester compds. by esterification of polyvalent alcs. and fatty acids under the presence of a catalyst system, the prepn. method of ester compds. comprises performing esterification using a heterogeneous catalyst system for esterification comprising: (a) 100 weight parts of an inorg. support; (b) 5 to 20 weight parts of a catalyst activating compound in which tin (Sn) and titanium (Ti) are mixed in a mole ratio of 1:0.01 to 0.5; and (c) 0.5 to 2.0 weight parts of a catalytic activity improver containing nitrogen (N), phosphorous, or a mixture thereof.

L12 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:376970 CAPLUS  
 DOCUMENT NUMBER: 138:371678  
 TITLE: Method and apparatus for production of fuel from acid fats  
 INVENTOR(S): Piacentini, Aldo; Niesner, Rene  
 PATENT ASSIGNEE(S): GMK-Gesellschaft Fuer Motoren Und Kraftanlagen Mbh, Germany  
 SOURCE: PCT Int. Appl., 26 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040268	A1	20030515	WO 2002-EP12536	20021108
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10155241	C1	20030703	DE 2001-10155241	20011109
CA 2466074	A1	20030515	CA 2002-2466074	20021108
AU 2002363345	A1	20030519	AU 2002-363345	20021108
EP 1448750	A1	20040825	EP 2002-802660	20021108
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 2004186307	A1	20040923	US 2004-775996	20040209
US 2007161809	A1	20070712	US 2007-690501	20070323
PRIORITY APPLN. INFO.:			DE 2001-10155241	A 20011109
			WO 2002-EP12536	W 20021108
			US 2004-775996	A1 20040209

AB Disclosed is a method for production of a fuel from acid vegetable or animal fats containing free fatty acids in catalytic esterification reactions. The fatty acids contained in the acid fats are esterified at a high temperature and in a vacuum with 1 or more multihydric alcs. in the presence of solid neutral catalysts which are provided in a fixed bed inside the reaction system. The acid fats are guided in the reaction system downwards countercurrently to the flow of the alc. and a mixture containing alc. and water is withdrawn under the effect of the vacuum in the upper part of the reaction system. The method is simple and inexpensive. The invention also relates to a system for carrying out the method exhibiting the following characteristics: a tower apparatus comprising  $\geq L1$  fixed bed layer of the solid neutral catalyst, an inlet in the upper part of the tower apparatus for introduction of the acid fat, an outlet for withdrawal of the neutralized fat, an inlet in the lower part of the tower apparatus for feeding the alc. so that it flows through the fixed bed layer in a countercurrent to the fat to be treated, an outlet in the upper part of the tower apparatus from which a mixture containing water and alc. can be withdrawn by means of a vacuum device. The

neutralized fat is suitable as a fuel for thermal power plants and large diesel engines.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:119296 CAPLUS  
 DOCUMENT NUMBER: 136:167561  
 TITLE: Process for the isolation of sterols from the residues of fatty-acid or methyl-ester production  
 INVENTOR(S): Schwarzer, Joerg; Gutsche, Bernhard; Wollmann, Gerhard  
 PATENT ASSIGNEE(S): Cognis Deutschland GmbH, Germany  
 SOURCE: Eur. Pat. Appl., 7 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1179536	A2	20020213	EP 2001-118218	20010728
EP 1179536	A3	20050608		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 10038442	A1	20020221	DE 2000-10038442	20000807
US 2002058827	A1	20020516	US 2001-923629	20010807
US 6956125	B2	20051018		

PRIORITY APPLN. INFO.: DE 2000-10038442 A 20000807

AB A process for obtaining sterols from the residue of fatty acid and/or Me ester production is characterized by: (a) in the residue on hand free fatty acids are esterified with a polyhydroxy or lower monohydroxy alc., after that (b) the mixture containing partial glycerides is alcoholized at 90 - 145° and a pressure of 2 - 10 bar over 2 - 20 mins with a lower alc. in the presence of a basic catalyst, (c) after the alcoholysis the excess lower alc. is distilled from the reaction mixture, (d) the alcoholysis catalyst as well as the included glycerin if necessary are separated, (e) the fatty acid ester is distilled from the mixture and (f) the bottoms containing sterol and remaining partial glycerides through a further alcoholysis at 115 - 145° and a pressure of 2 - 10 bars over 4 - 8 h leads to free sterol esters and fatty acid esters. Thus, the distillation residue from the cleavage of soybean oil is treated with glycerin in the presence of tin isoctanoate at 215° and 7 mbar; the residue is then treated with MeOH containing NaOMe at 137° and 6 bar for 8 mins.; the Me esters are then distilled out; then residue is again treated with MeOH containing

NaOMe for 8 h at 120° and 5 bar; the methanol is then flash evaporated and the catalyst neutralized with citric acid; the product mixture is washed with H2O to give a product containing 7.5% free sterols and 0.04% bound sterols; the sterol mixture contains: 1.2% cholesterol, 1.8% brassicasterol, 23.1% campesterol, 15.3% stigmasterol, 48.9%  $\beta$ -sitosterol, 2.2%  $\Delta$ 5-avenasterol, 0.3%  $\Delta$ 7-avenasterol and 0.05% citrosadienol.

L12 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:265486 CAPLUS  
 DOCUMENT NUMBER: 134:267805  
 TITLE: Preparation of alkyd resins containing  
 polyesters recycled from wastes for coatings  
 INVENTOR(S): Kawamura, Chicara; Ito, Kei; Yoshihara, Ichiro; Numa,  
 Nobushige  
 PATENT ASSIGNEE(S): Kansai Paint Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 38 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001025309	A1	20010412	WO 2000-JP6981	20001006
W: CA, JP, KR, US RW: DE, FR, GB				
CA 2383654	A1	20010412	CA 2000-2383654	20001006
CA 2383654	C	20060103		
EP 1217023	A1	20020626	EP 2000-964715	20001006
EP 1217023	B1	20031210		
R: DE, FR, GB				
JP 3310661	B2	20020805	JP 2001-528472	20001006
TW 539697	B	20030701	TW 2000-89120876	20001006
US 6686399	B1	20040203	US 2002-69797	20020228
PRIORITY APPLN. INFO.:			JP 1999-286707	A 19991007
			JP 1999-288981	A 19991012
			JP 2000-14694	A 20000124
			WO 2000-JP6981	W 20001006

AB The transparent alkyd resin having free from foreign substances and filtration residues, is prep'd. by depolymg. a reclaimed polyester resin derived from terephthalic acid as a main starting material with a polyhydric alc. mixture comprising a tetrahydric or higher alc. and a trihydric or lower alc. in the presence of a depolymn. catalyst, and esterifying the depolymn. product with a polybasic acid and a fatty acid. Thus, 109 parts pentaerythritol was mixed with ethylene glycol 107, zinc acetate 1.5 and regenerated poly(ethylene terephthalate) 154 parts at 230°, reacted with 354 parts soybean fatty acid and 340 parts phthalic anhydride at 240° for 3 h, and diluted with 600 parts mineral spirit to give polymer with number average mol. weight 2900, acid value 9.5 mgKOH/g and hydroxy value 45 mgKOH/g, 154 parts of which was mixed with 0.5% cobalt naphthenate 0.6 and 12% zirconium naphthenate 2.5 parts, coated on a tin plate, curing at 20° and 60% RH, showing curing time 5 h and film hardness 25.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2000:68309 CAPLUS  
 DOCUMENT NUMBER: 132:127463  
 TITLE: Emollient esters based upon capryl alcohol and isostearic acid for dermatological compositions  
 INVENTOR(S): Fogel, Arnold W.  
 PATENT ASSIGNEE(S): Bernel Chemical Company, Inc., USA

SOURCE: PCT Int. Appl., 35 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000003680	A2	20000127	WO 1999-US15948	19990713
WO 2000003680	A3	20000330		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6126951	A	20001003	US 1998-115029	19980714
CA 2337227	A1	20000127	CA 1999-2337227	19990713
AU 9949949	A	20000207	AU 1999-49949	19990713
EP 1115478	A2	20010718	EP 1999-934029	19990713
EP 1115478	B1	20050119		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AT 287289	T	20050215	AT 1999-934029	19990713
ES 2237927	T3	20050801	ES 1999-934029	19990713
PRIORITY APPLN. INFO.: US 1998-115029 A 19980714 WO 1999-US15948 W 19990713				

AB The present invention relates to a novel emollient compound capryl isostearate, which is obtained from capryl alc. and isostearic acid. These emollient compds. may then be used in dermatol. products for their unexpected characteristics and as silicone-free carbon based replacements for the volatile cyclomethicones. In certain aspects of the present invention, the inclusion of capryl isostearate in combination with a volatile silicone is contemplated. Thus, capryl isostearate was obtained by the esterification of isostearic acid with capryl alc. in the presence of tin oxalate or di-Bu tin oxide. A lotion was obtained from Hetester PHA (propylene glycol-isoceteth-3-acetate) 10.0, capryl isostearate 15.0, water (deionized) 73.7, Veegum 0.8, Keltrol 0.4, and preservative 0.1. Optional pulverized pigment formulations may be added to a lotion from about 0.5 to 15 parts pigment composition to about 85-99.5 parts of the above lotion.

L12 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:32085 CAPLUS  
 DOCUMENT NUMBER: 130:68131  
 TITLE: Method for preparing fatty acid esters with a reduced heavy metal content by using tetravalent tin esterification catalyst compounds and reduction and precipitation agents  
 INVENTOR(S): Falkowski, Juergen; Reuter, Erich; Wollmann, Gerhard; Schwarzer, Joerg  
 PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany  
 SOURCE: Ger., 4 pp.  
 CODEN: GWXXAW

DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19741913	C1	19981224	DE 1997-19741913	19970925
			DE 1997-19741913	19970925

PRIORITY APPLN. INFO.:

AB Fatty acids esters with a reduced heavy metal content are prep'd. by conducting the (trans)esterification of fatty acid (esters) with alcs. using tetravalent tin compds. as esterification catalysts in the presence of reducing agents so that the tin ppts. as stannous compds. having little solubility. Thus, Me octanoate was transesterified with ethylene glycol in the presence of dibutyltin diacetate, the methanol was removed, hypophosphorous added, and the mixture filtered through clay and a filter agent to produce a glycol ester product having hydroxyl value 3, acid value 0.1, and residual tin content 2 ppm.

L12 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1996:319146 CAPLUS  
 DOCUMENT NUMBER: 125:9183  
 TITLE: Production of tocopherol concentrates from vegetable oil byproducts by an esterification /distillation process  
 INVENTOR(S): Barnicki, Scott D.; Sumner, Charles E., Jr.; Williams, H. Chip  
 PATENT ASSIGNEE(S): Eastman Chemical Company, USA  
 SOURCE: U.S., 17 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5512691	A	19960430	US 1994-334901	19941107
ZA 9509433	A	19960515	ZA 1995-9433	19951107
CA 2203550	A1	19960517	CA 1995-2203550	19951107
WO 9614311	A1	19960517	WO 1995-US14612	19951107
W: AU, BR, CA, CN, CZ, HU, JP, MX, RU, SK, UA RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9641530	A	19960531	AU 1996-41530	19951107
EP 790990	A1	19970827	EP 1995-939870	19951107
EP 790990	B1	20010620		
R: DE, ES, FR, GB, IT, NL, PT				
BR 9509626	A	19980106	BR 1995-9626	19951107
CN 1171106	A	19980121	CN 1995-196967	19951107
JP 10508605	T	19980825	JP 1995-515525	19951107
ES 2157350	T3	20010816	ES 1995-939870	19951107
PT 790990	T	20010928	PT 1995-939870	19951107
PRIORITY APPLN. INFO.:			US 1994-334901	A 19941107
			WO 1995-US14612	W 19951107

AB An improved process is described for the prepn. of tocopherol concs. from vegetable oil distillates. Tocopherol concs. are obtained

of containing 20-80% tocopherol by weight, with an overall recovery of tocopherol

72-97%. The process is comprised first of an esterification reaction where the more volatile alcs. are converted to their less volatile fatty acid esters, followed by a series of distillation steps where components boiling higher and lower than the tocopherols are separated from tocopherols and other like boiling substances. Advantages of the process are that tocopherol concs. are produced efficiently and economically in a min. number of steps without the use of solvents and with a relatively small capital investment.

L12 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:330645 CAPLUS

DOCUMENT NUMBER: 122:82934

TITLE: Lithium salts as catalysts for preparation of polyol esters with bright color

INVENTOR(S): Klamann, Joerg-Dieter; Klein, Johann; Daute, Peter; Fleischer, Erwin; Wedl, Peter

PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany

SOURCE: Ger. Offen., 5 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4304468	A1	19940818	DE 1993-4304468	19930215
CA 2156155	A1	19940818	CA 1994-2156155	19940207
WO 9418153	A1	19940818	WO 1994-EP345	19940207
W: CA, JP, US RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE EP 683763	A1	19951129	EP 1994-907513	19940207
R: DE, FR, GB, IT, NL				
PRIORITY APPLN. INFO.:			DE 1993-4304468	A 19930215
			WO 1994-EP345	W 19940207

OTHER SOURCE(S): MARPAT 122:82934

AB Fatty acids or glycerides (e.g., rape oil) are (trans) esterified with polyols such as glycerol or pentaerythritol in the presence of a Li salt (e.g., LiOH or Li soap), and the products are bleached to give polyol esters having a brighter color than polyol esters prep'd. with tin-containing catalysts which show lower activity than the Li salts. The polyol esters are useful in polymers as lubricants, antistatic agents, and light stabilizers.

L12 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1993:581545 CAPLUS

DOCUMENT NUMBER: 119:181545

TITLE: Polyester-type dendritic macromolecules, and their manufacture and use

INVENTOR(S): Hult, A.; Malmstroem, E.; Johansson, M.; Soerensen, K.

PATENT ASSIGNEE(S): Perstorp AB, Swed.

SOURCE: Swed., 20 pp.

CODEN: SSXXAY

DOCUMENT TYPE: Patent

LANGUAGE: Swedish

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 468771	B	19930315	SE 1992-564	19920226
SE 9200564	A	19930315		
SE 468771	C	19930715		
WO 9317060	A1	19930902	WO 1993-SE148	19930224
	W: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US			
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG			
AU 9336530	A	19930913	AU 1993-36530	19930224
EP 630389	A1	19941228	EP 1993-905712	19930224
EP 630389	B1	19980429		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE			
JP 07504219	T	19950511	JP 1993-514755	19930224
JP 2574201	B2	19970122		
AT 165609	T	19980515	AT 1993-905712	19930224
ES 2115762	T3	19980701	ES 1993-905712	19930224
CA 2117486	C	19980922	CA 1993-2117486	19930224
US 5418301	A	19950523	US 1994-256493	19940713
PRIORITY APPLN. INFO.:			SE 1992-564	A 19920226
			WO 1993-SE148	A 19930224

AB The macromols., consisting of a central initiator mol. or polymer containing  $\geq 1$  reactive groups (A), which groups A are bonded with reactive groups (B) of a chain-lengthening monomer to form a 1st, both A an B group-containing treelike structure that may be further lengthened and branched out from the initiator mol. or polymer by addnl. monomeric chain-lengtheners via bonding to the A and B groups, and, optionally, also further lengthened by reaction with a chain stopper, A and B are hydroxyl A and carboxyl groups, resp., and the chain-lengthening monomer contains a group B and  $\geq 2$  groups A or hydroxyalkyl-substituted A. The macromols. are manufactured by reacting an initiator mol. or polymer containing  $\geq 1$  hydroxyl groups at 0-280, preferably 100-250°, with a chain-lengthening monomer containing a group B and  $\geq 2$  groups A or hydroxyalkyl-substituted A, after which the reaction products may be reacted with a chain stopper. The macromols. are used as components in alkyd resins, saturated and unsatd. polyesters, epoxy resins, polyurethanes, UV-curable binders, dental materials, lubricants, microlithog. pigments, powdered binders, and amino resins. To 1.0 mol di-trimethylolpropane were added, under flowing Ar and at 120°, 8.0 mol dimethylolpropionic acid and 0.12 mol p-toluenesulfonic acid, and the reaction was carried out at 140° for 2 h, after which 8.0 mol lauric acid were added and the reaction continued for 2 h to give a polyester having viscosity 10 Pa.s at 23°. Addition of 4.0 and 12.0 mol lauric acid gave viscosity 1037 and 1.5 Pa.s, resp.

L12 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1987:496342 CAPLUS  
 DOCUMENT NUMBER: 107:96342  
 TITLE: Preparation of carboxylate esters  
 INVENTOR(S): Maeda, Kazuhito; Niiyama, Kaoru; Kadoma, Yoshihito  
 PATENT ASSIGNEE(S): Nippon Oils & Fats Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent

LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62056452	A	19870312	JP 1985-193888	19850904
JP 04082134	B	19921225		

PRIORITY APPLN. INFO.: JP 1985-193888 19850904  
 AB Esters were prep'd. from carboxylic acids and alcs. in the presence of  $MCl_n$  ( $M = Sn, Ti, Zn; n = 2-4$ ) and fatty acid soaps. Thus, refluxing neopentyl glycol,  $Me(CH_2)_3CH_2CO_2H$ ,  $Na$  heptanoate, and  $SnCl_2$  for 5 h at 210-220° gave an ester showing hue 30, no corrosion to the reactor, good oxidation resistance, and containing no Cl.

L12 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1986:480843 CAPLUS  
 DOCUMENT NUMBER: 105:80843  
 TITLE: Urethane polymer for coatings  
 INVENTOR(S): Hajek, Karel; Kitzler, Jaroslav; Kratky, Bohumil; Lesek, Frantisek; Kaspar, Frantisek; Vasicek, Zdenek  
 PATENT ASSIGNEE(S): Czech.  
 SOURCE: Czech., 3 pp.  
 CODEN: CZXXA9  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Czech  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 223605	B1	19831125	CS 1981-5748	19810729

PRIORITY APPLN. INFO.: CS 1981-5748 19810729  
 AB A polyurethane binder for varnishes with reduced tendency to yellowing is prep'd. by a 3-stage process. Hydroxyesters are prep'd. from 80-270 parts di- to hexavalent polyols, 400-700 parts fatty acids of rape oil containing <10% erucic acid (I), their glycerol esters, or mixts. with drying oils (95-185 g I2/100 g) or their fatty acids [mol. ratio 1:(0.1-9)], and 0.001-0.5% catalyst at 180-260°, allowed to react with 150-300 parts polyisocyanates at NCO/active H ratio 1:(1-1.3) and 0.002-0.5% organotin catalyst in a solvent at 40-150°, and condensed with 20-100 parts C2-8 alc. to reduce NCO content below 1%. Thus, rape oil (<5% glycerol esters of I) 527, glycerol 87, and  $Bu_2Sn$  bis(mono-2-ethylhexyl maleate) 0.6 kg was heated to 240° for 3-3.5 h, and cooled to 50°; adding 214 kg 2,4-TDI and 530 kg petroleum lacquer (initial NCO/OH ratio 1:1.16), heating to 95° until NCO content decreased below 0.5%, and reaction with 15 kg  $BuOH$  at 98° for 1 h gave a 60% solution of polyurethane binder which dried in presence of 0.04% Co to stages A and B1 within 2.5 and 24 h, resp., and was suitable for wood varnish or min. or Zn anticorrosive primers.

L12 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1986:174372 CAPLUS  
 DOCUMENT NUMBER: 104:174372  
 TITLE: Hydroxystearic acid diesters

INVENTOR(S): Ciaudelli, Joseph P.  
 PATENT ASSIGNEE(S): Revlon, Inc., USA  
 SOURCE: U.S., 4 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4567037	A	19860128	US 1984-673301	19841120
IL 77010	A	19890928	IL 1985-77010	19851112
AU 8549875	A	19860529	AU 1985-49875	19851113
AU 591075	B2	19891130		
IN 164535	A1	19890401	IN 1985-CA813	19851115
ZA 8508826	A	19860827	ZA 1985-8826	19851118
CA 1263664	A1	19891205	CA 1985-495597	19851118
DK 8505337	A	19860521	DK 1985-5337	19851119
DK 165364	B	19921116		
DK 165364	C	19930405		
FI 8504554	A	19860521	FI 1985-4554	19851119
FI 86712	B	19920630		
FI 86712	C	19921012		
NO 8504624	A	19860521	NO 1985-4624	19851119
NO 162420	B	19890918		
NO 162420	C	19891227		
EP 182355	A2	19860528	EP 1985-114697	19851119
EP 182355	A3	19870506		
EP 182355	B1	19890329		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
BR 8505793	A	19860812	BR 1985-5793	19851119
AT 41767	T	19890415	AT 1985-114697	19851119
JP 61129149	A	19860617	JP 1985-258821	19851120
JP 06037429	B	19940518		

PRIORITY APPLN. INFO.: US 1984-673301 A 19841120  
 EP 1985-114697 A 19851119

AB Cosmetic compns. contain  $\text{Me}(\text{CH}_2)5\text{CH}(\text{O}_2\text{CR}_1)(\text{CH}_2)10\text{CO}_2\text{R}_2$  (I;  $\text{R}_1 = \text{C17}$  hydrocarbyl containing 1-3 double bonds;  $\text{R}_2 = \text{C}5\text{-22 hydrocarbyl}$ ) 1-20, humectant 5-10, thickener 0.2-1.0, emulsifier 0.5-10, and  $\text{H}_2\text{O}$  50-80%. I were prep'd. by 1st esterifying 12-hydroxystearic acid (II) with a long chain unsatd. fatty acid and then reacting the unsatd. esterified fatty acid with a long chain fatty alc. Thus, II was treated with oleic acid in presence of dibutyl tin oxide at 190° to give 12-(oleoyloxy)stearic acid, which was treated with 2-ethyl-1-hexanol at 180° to give 2-ethylhexyl 12-(oleoyloxy)stearate (III). A cosmetic cream was prep'd. containing  $\text{H}_2\text{O}$  61.25, Carbopol 934 5.00, III 8.00, propylene glycol 7.00, methylparaben 0.30, propylparaben 0.10, glyceryl stearate 4.00, cetyl alc. 1.20, stearic acid 2.40, mineral oil 8.00, Steareth-20 1.00, triethanolamine 1.40, tri-Na EDTA 0.05, Quaternium-15 0.10, dimethicone 0.20% by weight. This cream was compared with a cream containing iso-Pr myristate (IV) in place of III and while both products are acceptable for use as hand creams in providing moisturizing benefit, smoother and silky-feeling, III produced an oily feel whereas IV felt waxy. I have an oral toxicity in rats >15.9 mL/kg; skin irritation index 0.1; and the Draize test showed a minimal conjunctival irritation which cleared by day 2.

L12 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1984:123166 CAPLUS  
 DOCUMENT NUMBER: 100:123166  
 TITLE: Purification of higher alcohols  
 PATENT ASSIGNEE(S): Nissan Chemical Industries, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 58170723	A	19831007	JP 1982-51752	19820330
JP 61026973	B	19860623		

PRIORITY APPLN. INFO.: JP 1982-51752 19820330  
 AB Alcs. are purified by heating the crude alcs. in the presence of esterification catalysts to esterify the accompanying fatty acids, toping to collect the alc. distillate containing no fatty acids, and hydrogenating the distillate in the presence of hydrogenation catalysts. Thus, 500 g C7-10 alc. and 0.05 g tin oxalate [814-94-8] were stirred 120 min at 185° under N, topped to leave 5% bottom, mixed (400 g distillate) with 20 g 50% Ni/kieselguhr, pressured with H at 50 kg/cm<sup>3</sup>, hydrogenatd 120 min at 90°, and filtered to give 360 g alc. having acid number 0.01, carbonyl number 0.20, iodine number 0.015%, compared with 0.05, 0.41, and 0.05, resp., for an alc . purified by hydrogenation without esterification.

L12 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1975:16337 CAPLUS  
 DOCUMENT NUMBER: 82:16337  
 ORIGINAL REFERENCE NO.: 82:2605a,2608a  
 TITLE: Carboxylate esters  
 INVENTOR(S): Dvorkina, S. I.; Pilyukova, A. T.; Mozgovaya, V. Ya.; Fedorova, E. V.  
 SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1974, 51(34), 62.  
 CODEN: URXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Russian  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 443024	A1	19740915	SU 1972-1761766	19720320

PRIORITY APPLN. INFO.: SU 1972-1761766 A 19720320  
 AB Carboxylate esters were prep'd. by esterifying the acids with alcs. in the presence of Sn salts of C12 and higher fatty acids.

L12 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1973:443739 CAPLUS  
 DOCUMENT NUMBER: 79:43739  
 ORIGINAL REFERENCE NO.: 79:7105a,7108a

TITLE: Alkyd resins modified by styrene and an acrylate  
 INVENTOR(S): Katsibas, Themistoklis; Dalibor, Horst; Kiessing, Hans  
 Joachim; Schmidt, Rolf  
 PATENT ASSIGNEE(S): Reichhold-Albert-Chemie A.-G.  
 SOURCE: Ger. Offen., 19 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2123177	A1	19730530	DE 1971-2123177	19710511
DE 2123177	C3	19821125		

PRIORITY APPLN. INFO.: DE 1971-2123177 A 19710511  
 AB Modified alkyd resins, suitable for binders for air-drying coatings, auto repair lacquers, and baking lacquers, were prep'd. by interesterification of 44-50 parts castor oil fatty acid triglycerides with 11-14 parts glycerol [56-81-5] at 235-40.deg., esterification of the reaction product with 4-12 parts ethylene glycol [107-21-1] and 34-36 parts phthalic anhydride [85-44-9] at 180-200.deg., and copolymn. of the product with 22-26 parts styrene [100-42-5] and 8-12 parts Me methacrylate [80-62-6] at .sim. 150.deg. in the presence of an inert organic solvent with b.p. 105-280.deg., e.g. xylene. A mixture of 50% modified alkyd resin 200, rutile pigment 100, and Solvesso 150-diacetone alc. mixture 9 g was homogenized in a ball mill 48 hr, coated on tin plate, air dried, and heated at 160.deg. for 20 min to give a glossy, white lacquer with good flow, deep drawing ability, beading resistance, sterilizability, blocking resistance, and pigment absorption.

L12 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1967:95908 CAPLUS  
 DOCUMENT NUMBER: 66:95908  
 ORIGINAL REFERENCE NO.: 66:18015a,18018a  
 TITLE: Polyurethane foams  
 PATENT ASSIGNEE(S): Henkel und Cie. G.m.b.H.  
 SOURCE: Neth. Appl., 11 pp.  
 CODEN: NAXXAN  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Dutch  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
NL 6601776		19660913	NL 1966-1776	19660211
DE 1237776			DE	
FR 1470912			FR	
GB 1086795			GB	

PRIORITY APPLN. INFO.: DE 19650312  
 AB The prepn. of polyurethane foams by the conversion of di- or polyisocyanates with polyhydroxy compds. (I) is described. I are obtained from polycarboxylic acids prep'd. by the addition of  $\alpha, \beta$ -unsatd. carboxylic acids or their anhydrides, esters, and amides to dimerized fatty acids and by subsequent or simultaneous esterification with excess polyvalent alc

Thus, in the general procedure for prep. I, a mixture of dimerized fatty acids and  $\alpha, \beta$ -unsatd. carbonyl compds. was heated under N, diethylene glycol (II) and 0.01% isopropyltitanate (catalyst) were added, and the product was esterified by heating. The pressure during the late stages of heating was reduced to 100 mm. The fatty acid mixts. used comprised: (A) monomeric fatty acids 5, dimeric fatty acids 71, and oligomeric fatty acids (acid number 178 and iodine number 128) 24%; and (B) monomeric fatty acids 50.0, dimeric fatty acids 37.5, and oligomeric fatty acids (acid number 185 and iodine number 102) 12.5%. I were prep'd. as follows (fatty acid mixture, g. used,  $\alpha, \beta$ -unsatd. carbonyl compound, g. used, temperature, reaction time in hrs., g. II, viscosity in cp., and g. tolylene diisocyanate, given) [see method of Otey, et al. (CA 62, 1745b)]: A, 1000, maleic acid anhydride (III), 463; 200-25°, 4, 1222, 10, 230, 464; A, 751, III, 348, 250-3°, 0.5, 862, 16,050, 426; A, 525, III, 244, 180°, 10, 715, 8520, 373; A, 500, Bu acrylate, 303, 250°, 0.5, 397, 3520, 307; A, 500, Me methacrylate (IV), 236, 250°, 0.5, 358, 1520, 335; A, 500, fumaric acid anhydride, 274, 250°, 0.5, 452, 11,350, 390; A, 1000, III, 174, 250°, 0.5, 645, 3000, 354; A, 600, Bu acrylate, 136, 250°, 0.5, 316, 1733, 349; A, 600, acrylamide, 75.5, 250°, 0.5, 212, 5134, 207; A, 600, IV, 106, 250°, 0.5, 303, 1796, 331; A, 600, fumaric acid, 123, 250°, 0.5, 374, 5544, 336; B, 1000, III, 463, 200-40°, 4, 1195, 3670, 457; B, 752, III, 348, 250°, 0.5, 931, 3510, 459; B, 525, III, 244, 180°, 10, 715, 1530, 380. Mixts. containing I 50.0, 1,4-diazabicyclo[2.2.2]octane 0.30, tin(II) octoate 0.05, ethoxylated poly(dimethylsiloxane) 1.00, and 50% aqueous Na castor oil sulfonate 3.75 g. were mixed with com. diphenylmethane 4,4'-diisocyanate and stirred vigorously to produce the title foam. Rising times and foam qualities are given.

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L12 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1967:56122 CAPLUS  
 DOCUMENT NUMBER: 66:56122  
 ORIGINAL REFERENCE NO.: 66:10631a,10634a  
 TITLE: Rigid polyurethan foams  
 INVENTOR(S): Bernstein, Carl; Longley, Kermit  
 PATENT ASSIGNEE(S): Witco Chemical Co., Inc.  
 SOURCE: U.S., 277-368  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3298974	-----	19670117	US 1965-502516	19630422
AB	Phthalic anhydride (I) is esterified with an adduct from ethylene oxide (II), giving a polyester which is low enough in viscosity to be utilized easily in polyurethan foam prep'n. Thus, 2 moles adduct (III) from 1 mole trimethylolpropane (IV) and 1.76 moles II is esterified with 0.5 mole adipic acid and 0.5 mole I by heating at			

220-50° in an inert atmospheric giving a polyester with acid number 1.5, OH number 404, and viscosity 22,000 cp. at 25°. The polyester from 2 moles III and 1 mole I had viscosity 100,000 cp. Adducts of II with sorbitol, pentaerythritol, trimethylolethane, glycerol, and mixts. of these alcs. were also used. I was also used with tall oil fatty acids and oleic acid. A prepolymer was prep'd. from 20 parts of a polyester (V) (from 1 mole of an adduct with II-IV mole ratio 1:75 and 0.5 mole I) and 80 parts tolylene diisocyanate, mixed with 33 parts Freon 11, and added to a homogeneous mixture of V 108, Silicone X-501 0.5, and di-Bu tin dilaurate 0.3 parts in a mold. The one-shot foaming method using N,N,N',N'-tetramethyl-1,3-butanediamine or dimethyllethanamine catalyst was also used. The foams are rigid and highly water resistant, and can be used as insulation.

L12 ANSWER 21 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1966:105755 CAPLUS  
 DOCUMENT NUMBER: 64:105755  
 ORIGINAL REFERENCE NO.: 64:19990b-e  
 TITLE: A coating composition comprising a polyepoxide, phenolic, acrylic, and polyester resin  
 INVENTOR(S): Watson, Edwin A.  
 PATENT ASSIGNEE(S): Pittsburgh Plate Glass Co.  
 SOURCE: 5 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3245925		19660412	US 1963-289442	19630620
PRIORITY APPLN. INFO.:			US	19630620

AB A polyepoxide (I), prep'd. from bisphenol A-epichlorohydrin 30 and tall oil fatty acids 2.4 parts by weight; a phenol-HCHO resin (Bakelite BKS-2600 (II), a Me methacrylate polymer (III), prep'd. from Me methacrylate 90 and glycidyl methacrylate 10% by weight; and an epoxy-containing polyester (IV), prep'd. by, treating the esterification product of adipic acid 1929, azaleic acid 214, and 1,4-butanediol 1479 parts with Unox Epoxide 201 (3,4-epoxy-6-methylcyclohexylmethyl 3,4-epoxy-6-methylcyclohexanecarboxylate) 300 parts, are blended to form a coating composition having excellent adhesion to metal (or other substrates) with a high degree of flexibility. The coating composition may include pigments, solvents, or other additive materials and is suitable as a primer for plastics, as a coating without a finish coat, or as a primer coating under polyethylene. Thus, I (50% solution in 1:1 xylene:cellulose acetate) 5.5, iron oxide pigment 6, and diacetone alc. 6.5 parts were mixed and ground in a pebble mill for 24 hrs. I 11 and diacetone alc. 2.5 parts were added in excess and the pigment paste blended with I 22, II 7.25, III (19% solution in diacetone alc.) 425, IV 63, and diacetone alc. 272 parts by weight to form a coating composition containing 20.2% solids and weighing 8.2 lb./gal. The coating composition thus prep'd. can be rolled onto bright tin plate by using a film weight of 2.5-3.0 mg./cm.2, baked for 10 min. at 375°F., overcoated with a plastisol, and baked for 4-5 min. at 375°F. to give a coated metal that can be fabricated into bottle caps without destroying the continuity of the film. The tin plate coated with the composition of this process is also suitable as a substrate for

polyethylene.

L12 ANSWER 22 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1964:483774 CAPLUS  
 DOCUMENT NUMBER: 61:83774  
 ORIGINAL REFERENCE NO.: 61:14536f-g  
 TITLE: Diesters  
 INVENTOR(S): Gearhart, William M.; Bramer, Paul T. Von; Hagemeyer, Hugh J., Jr.; Robinson, Alfred C.; Hull, David C.  
 PATENT ASSIGNEE(S): Eastman Kodak Co.  
 SOURCE: 26 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1359112		19640424	FR 1962-915198	19621113
GB 1030213			GB	
GB 1030215			GB	
US 3211561		19651012	US 1961-152609	19611115
PRIORITY APPLN. INFO.:			US	19621115

AB 1,3-Glycol monoesters, which contain a secondary alc. group, are esterified with a mono- or dicarboxylic acid in the presence of a neutral or basic organotin compound to give compds. which can be used as plasticizers. Thus, a mixture of 1096 g. 2,2,4-trimethyl-1,3-pentanediol (I), 585 g. adipic acid (II), and 176 g. iso-PrCO<sub>2</sub>H (III) in 200 ml. PhMe and 1.5 g. Bu<sub>2</sub>SnO in 300 ml. xylene is refluxed 8 hrs. as the H<sub>2</sub>O is removed as part of an azeotrope, the product washed at 80° with an equal volume of 7.5% NaOH, and the organic phase separated, washed with H<sub>2</sub>O,

and

distilled to give 96% polyester, APHA color 150. Similarly prep'd. are (reactants and mol. weight of product given): I, II, III, -; I monoisobutyrate (IV), II, 625; IV, phthalic anhydride, 640; IV, azelaic acid 695; 2,4-dimethyl-2-ethyl-1,3-hexanediol mono(2-methylbutyrate), II, 670; I, II, III, 900; I, II, IV, 700.

L12 ANSWER 23 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1964:426263 CAPLUS  
 DOCUMENT NUMBER: 61:26263  
 ORIGINAL REFERENCE NO.: 61:4593e-g  
 TITLE: Alkyd baking resins modified with synthetic saturated fatty acids  
 AUTHOR(S): Ganzlik, M.; Mleziva, I.  
 SOURCE: Lakokrasochnye Materialy i Ikh Primenenie (1964), (2), 15-21  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable  
 AB Alkyd baking resins were prep'd. at 29, 33, and 36% fatty acid contents and included caproic, caprylic, pelargonic, capric, lauric, myristic, palmitic, and stearic acids. The esterification was conducted at 220° with glycerol (I), trimethylolethane (II), and trimethylolpropane (III). The effect of the fatty acids and the different alcs. was observed on baked films of the alkyd resins blended at 4:1, 3:1, and 2:1 ratios with a melamine-HCHO resin. The films were baked on glass and tin

plates for 30 min. at 80, 100, and 120°. Comparable pigmented films were prep'd. with rutile TiO<sub>2</sub> at 20% pigment volume concentration. The resin viscosity, the gloss of the pigmented films, and the flexibility of the clear and pigmented films are improved as the C content of the fatty acid increases. These properties are also better when the alkyd resin is prep'd. from I than from II or III. The impact resistance is very poor when the C content of the fatty acid is > 10-12. The impact resistance of the alkyd resins with III is superior to those resins with I or II. The optimum film properties are achieved with an alkyd resin containing 33% C<sub>10</sub>-C<sub>12</sub> fatty acids, a molar ratio of COOH:OH of 1:1.3, and a 3:1 ratio of alkyd:melamine resins.

L12 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1961:90632 CAPLUS  
 DOCUMENT NUMBER: 55:90632  
 ORIGINAL REFERENCE NO.: 55:17102d-i,17103a-b  
 TITLE: Derivatives of ethylene-maleic anhydride copolymers  
 INVENTOR(S): Zopf, George W., Jr.; Johnson, John H.; Hedrick, Ross M.; Fields, Joseph E.; Butler, John M.  
 PATENT ASSIGNEE(S): Monsanto Chemical Co.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2977334	-----	19610328	US 1956-613829	19561004

GI For diagram(s), see printed CA Issue.

AB An equimolar copolymer (I) of C<sub>2</sub>H<sub>4</sub>-maleic anhydride in which the repeating polymer structure CH<sub>2</sub>CH<sub>2</sub>CH.C(:O).O.C(:O)CH, was termed the C<sub>2</sub>H<sub>4</sub>-maleic anhydride unit was esterified with a long-chain polyethylenically unsatd. aliphatic alc. of 8-20 C atoms or mixts. of long-chain ethylenic aliphatic alcs. of 8-20 C atoms, the polyethylenically unsatd. alcs. being present in a predominant amount to provide the half ester; the resultant 2nd carboxyl group of the C<sub>2</sub>H<sub>4</sub>-maleic anhydride unit was condensed with alcs. and (or) amines of up to 20 C atoms and free from substituents other than OH and NH<sub>2</sub> radicals. Thus, 126 g. I and 232 g. allyl alc. (II) were refluxed for 1.5 hrs. to give a clear homogeneous liquid. The mass was cooled, mixed with 2500 ml. H<sub>2</sub>O to precipitate the crude product, which was then extracted with boiling H<sub>2</sub>O and dried in vacuo at 60° for 24 hrs. to give a brittle solid product, the half ester of I and II. This half ester (9.2 g.) and 13.4 g. cis-9-octadecenyl alc. were heated together with periodic addition of xylene (25 ml.) to maintain 170-5° for 0.5 hr. The temperature then rose to 185° for 15 min. until ebullition had nearly ceased. The mixture was diluted with 25 ml. xylene. A film of this solution was applied to tin plate, air-dried for 1 hr., and baked at 160° for 1 hr. The resulting coating was tough and tack-free, and resistant to xylene and 10% caustic. Similar half esters of Pr, Bu, n-octyl, hydroabietyl alcs., N,N-dimethylaminoethanol, and N-hydroxyethylmorpholine were prep'd. also prep'd. were a 70% partial diester of BuOH, a 72.5% partial diester of decyl alc.; diesters of unsatd. C<sub>18</sub> alcs. and hydroabietyl alc.; diamide of dehydroabietylamine; a mixed half amide of dehydroabietylamine and hexadecylamine; a mixed diester of PrOH (50%) and unsatd. C<sub>18</sub> alcs

. (50%); a mixed diester of BuOH (70%) and linseed oil monoglyceride (30%); a mixed partial diester of BuOH (50%) and ethylene glycol; a mixed partial diester of BuOH (70%) and ethylene glycol; a mixed partial diester-amide of BuOH (70%) and mono-ethanolamine (30%); a mixed diester of BuOH (70%) and glycerol; an interpolymer of half ester of BuOH and epoxy resin; an interpolymer of 72.5% partial diester of BuOH and epoxy resin; mixed partial diesters of n-octyl alc. (50%) and ethylene glycol; C10 oxo alc. (72.5%) and ethylene glycol; C10 oxo alc. (72.5%) and glycerol; C10 oxo alc. (72.5%) and ethanolamine; C10 oxo alc. cross-linked with tolylene diisocyanate; mixed diesters of allyl alc. (50%) and unsatd. C18 alcs. (50%); allyl alc. (50%) and cis-9-octadecenyl alc. (50%); a mixed diester-amide of allyl alc. (50%) and unsatd. C18 amine (50%); mixed diesters of unsatd. C18 alcs. and hydroabietyl alcs.; hydroabietyl alc. (50%) and unsatd. C18 alcs. (50%); mixed ester-amide of C18 unsatd. alcs. and allyl amine or dehydroabietylamine; diester of C18 unsatd. alcs. vulcanized with S; mixed half amide of rosin amine and 2-ethylhexylamine; mixed diesters of C10 oxo alc. (72.5%) and a polyester of n-octyl alc., ethylene glycol and tung oil fatty acids; a urethan cross-linked diester of decyl alc. and ethylene glycol; a mixed diester-amide of allyl alc. (50%) with linseed oil monoglyceride (30%) and aniline (20%), 2-ethylhexylamine (20%), or n-octylamine (20%); and an Al salt of half ester of oxo decyl alc. Coating compns. of the ester-amides may be prep'd. in the conventional manner.

L12 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1951:20580 CAPLUS  
 DOCUMENT NUMBER: 45:20580  
 ORIGINAL REFERENCE NO.: 45:3612g-i,3613a-c  
 TITLE: Coating compositions containing modified alkyd resins and copolymerizable vinyl monomers  
 INVENTOR(S): Adams, Harold E.  
 PATENT ASSIGNEE(S): Armstrong Cork Co.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2537949	-----	19510116	US 1946-674933	19460606

AB The resins are prep'd. by esterifying a mixture of rosin, maleic anhydride, and linseed oil fatty acids with a mixture of a glycol, such as diethylene glycol, and a polyfunctional alc., such as glycerol. The modified alkyd resin is mixed with a vinyl monomer, such as styrene, and with pigments to provide protective coatings for metals, such as tin plate. The coatings have remarkably fast-drying times of approx. 10 min. at room temperature, and the copolymerization is not air-inhibited. Thus, 1200 g. (4.0 moles) of FF rosin, 600 g. (6.0 moles) of maleic anhydride, 600 g. (2.0 moles) of linseed oil fatty acids, 600 g. (6.4 moles) of diethylene glycol, and 250 g. (2.2 moles) of glycerol are used in the preferred synthesis. The rosin and maleic anhydride are heated together for 3 hrs. at 200° in a reaction vessel equipped with a stirrer, reflux condenser, thermometer, and heater. An inert atmospheric is maintained. The reactants condense to form a tribasic acid. An excess of maleic

anhydride (50% in this case) is desired to assure some free maleic anhydride in the alkyd which must contain some unsatn. so that cross linking by the vinyl monomer is possible. The other reactants are added, and the mixture is brought up to 225° and held there for 5.5 hrs. at which time the alkyd has an acid number of 70. The functionality of the starting mixture is such that it would form a gel if the reaction were carried far enough. It is necessary to stop the reaction before gel formation occurs. The desired point is reached when the acid number is 65 ± 15, the viscosity of a 75% solution in 80-20 xylene-MeOH solvent is 20 ± 10 poises, and the resin is tack-free at room temperature. The reaction is stopped by gradual addition of xylene, and when the temperature has fallen to

about

120°, sufficient MeOH is added to make an 80-20-xylene-MeOH solution of 75% solids content. A master batch is made by mixing 400 parts of the above resin vehicle with 300 parts of a pigment formulation. A coating composition is made by mixing 264 parts of the master batch, 3.0 parts of 6% Co drier, 180 parts of styrene monomer, and 50 parts of 80-20 xylene-MeOH. Under the influence of air, the vinyl monomer polymerizes and cross links the alkyd resin; this results in a very fast drying of the coating composition. It is believed that the presence of the oil fatty acids enhances the reaction and makes possible the rapid drying in the presence of air, in contradistinction to the laminating types of resins where the presence of air tends to inhibit polymerization.

L12 ANSWER 26 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1908:11109 CAPLUS

DOCUMENT NUMBER: 2:11109

ORIGINAL REFERENCE NO.: 2:2457g-i,2458a-i,2459a-i,2460a-f

TITLE: Analysis and Chemistry of Fats in 1907, Concluded

AUTHOR(S): Fahrion, W.

SOURCE: Angewandte Chemie (1908), 31, 1219-28

CODEN: ANCEAD; ISSN: 0044-8249

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB Rancidity, Oxidation and Chemistry of Varnish: V. Bouley has recognized for twelve years that the unsaturated fatty acids are concerned in the cause of rancidity. He believes hydrolysis takes place. R. Cohn has rancid the fatty acids of high molecular weight are decomposed and caproic, caprylic, and capric acids formed. Ryan and Marshall believe that the cause of rancidity is the oxygen of the air, while Lauffs and Huismann hold that the cause is enzymic. According to Euler the oxidation of fats in plants proceeds thus: primary hydroxyl groups are formed and the molecule decomposes; the smaller decomposition products are completely oxidized; the larger hydroxyl-containing ones serve for the synthesis of carbohydrates. S. A. Fokin has made some interesting experiments on the oxidation of drying oils. The following metals in the order indicated serve as catalysts: Co, Mn, Cr, Ni, Fe, Pt, Pd, Ca, Ba, Bi, Hg, U, Cu, Zn. The metals are used in the form of the oxides, the higher the O content the better is the action. The rapidity of the action varies as the cube root of the concentration of the catalysts. At from 1/5 to 20 atmospheres the amount of O taken up is proportioned to the pressure. Parallel with the oxidation there is a polymerization. Hemp, sunflower seed and poppy oil can be utilized in making varnish. If linseed oil is heated in the presence of inert gases or in sealed tubes up to 250-300°, polymerization takes place. The polymerization product is not attacked by lipase. The product resulting from heating in sealed tubes gives fatty acids whose molecular weight is double that of the calculated value. Upon

heating linseed oil to 270° under a pressure of 90-118 atmos. no polymérisation takes place, only a thickening of a physical nature. Olive oil behaves similarly. Bornemann has discovered that the addition of turpentine oil weakens the power of linseed oil varnishes to take up oxygen. M. Guedras has concluded that wood oil is unsuitable for varnish manufacture. Henseval and Huwart believe that liver oils yield aldehydes as a result of fermentation and oxidation. Molinari and Fenaroli by dissolving triolein in hexane and treating with ozone obtained an ozonide C57H104O15, which decomposes at 120-130°. It also decomposes upon boiling with water but gives off no ozone. With alcoholic potash it gives azelaic and nonylic acid and an acid of the formula According to Molinari unsaturated fatty acids with a triple bond take up no ozone and only two atoms of iodine, and can be differentiated from those of two bonds by these characteristics. C. Harries finds that stearic acid in hexane solution yields a thick light yellow ozonide which decomposes with water, giving off ozone and forming azelaic and pelargonic acids. C. Thieme states that the fatty acids of castor oil give a gelatinous ozonide, from the decomposition products of which azelaic acids only could be isolated. Erucasic and brassidinic acids yield an ozonide, C 22H34O8, which decomposes into nonylaldehyde, pelargonic and brassyllic acids. Fat-splitting: Fanto and Stritar found upon investigating the saponification of rape oil, that the reaction is practically direct and that no by-products are formed. Triarachin is more slowly attacked than the unsaturated glycerides. J. Marcussen maintains that Lewkowitsch's investigations on saponification do not prove that it proceeds in stages. He has repeated the latter's work and confirmed his result regarding a zigzag rise and fall of the acetyl value, but the separated fatty acids behave similarly, so that the presence of mono and diglycerides is not proven. Grun and Theiner do not doubt the possibility of saponification by stages, inasmuch as they obtained stearic acid, monostearic acid and monostearochlorhydrin, by treating distearochlorhydrin with H<sub>2</sub>SO<sub>4</sub>. J. Meyer has also shown saponification by stages while working with glycoldiacetate and triacetin. E. Hoyer has made some new investigations on the fat-splitting ferment of the castor oil seed. By digesting the seeds with water, water-soluble acids are formed, mainly lactic acid which dissolves the ferment. The finely ground seeds are centrifuged and the enzyme obtained as an emulsion. M. Nicloux adds a small amount of MnSO<sub>4</sub> or FeSO<sub>4</sub> whereby a catalytic action hastens the splitting. H. Mastbaum has found a fat-splitting enzyme in the cola nut. Water, weak acids and alkalies hinder the action. Alcohol and chloroform stop the action completely, while petroleum ether and ether hasten it. A lipase similar to that of the cola nut is found in maize, oats and black pepper. The ferment of the pancreatic juice may, according to W. Dietz, build esters as well as split them. The reaction is proportional to the concentration. Barbe, Garelli, and De Paoli split the fats (in autoclaves) by means of ammonia, and decompose the soap with steam or by boiling with water, or by transforming into K or Na soaps. A partial separation of the solid and liquid fatty acids can also be made, for the ammonia soaps of oleic acid are more slowly hydrolyzed and more soluble in water than the stearic and palmitic acid soaps. With the Twitchell process the fats should first be treated with H<sub>2</sub>SO<sub>4</sub> and steam and air excluded on account of darkening. In 44 hours a split of 95-6% can be obtained. The H<sub>2</sub>SO<sub>4</sub> hydrolysis is suited for dark fats such as leather fat. The fatty acids must be distilled. They contain 15% unsaponifiable in the case of leather fat. In the preliminary treatment with the Twitchell process a loss of glycerol may take place; the autoclave process gives more and better glycerol and is no more expensive. The process of Krebitz gives good results, a

freshly burned lime being necessary. Soaps: The investigations of Merklen have produced the following conceptions: The composition of soaps is variable and depends upon the character of the fatty acids, the nigro and the temperature. The sodium soaps behave like colloids, and in the technical sense are to be regarded as absorption compounds, all the materials of which in the process of boiling, exert an influence upon the finished product. J. Lewkowitsch does not agree with Merklen's views and doubts whether a hard soap could be produced with less than 31% of H<sub>2</sub>O, which he regards as the H<sub>2</sub>O of constitution. He also opposes the view of Krafft and Wiglow who hold that soap is completely hydrolyzed by means of water if the separated fatty acids are removed. The dissociation is hindered by the alkali. P. Rohland inclines to Merklen's view. Dilute soap solutions contain un-dissociated fatty acids, fatty acid anions, alkali and hydroxyl ions. Opposed to this, concentrated soap solutions have a marked colloidal character; they are solutions of water, alkali and OH ions in soap. The soap is very sensitive to excess of OH ions. As a sort of protection against excess of OH ions, CO<sub>3</sub> ions are added as K<sub>2</sub>CO<sub>3</sub> and Na<sub>2</sub>CO<sub>3</sub> in order to reduce causticity. E. Fisher obtains the same result by using KCl and NaCl. O. Sachs states that the addition of rosin is not to be considered as a cheapening agent for it improves the soap and makes the other fats more easily saponifiable. According to C. Rasp the disinfecting power of soap is considerable but variable and increases with the temperature. P. Krebitz has improved his process in that he recovers the (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub> by means of which he transforms his lime soap into ammonia soap before finally obtaining the sodium or potassium soap. H. Reuter obtains neutral soaps by the addition of zinc or magnesium salts and P. Horn by adding non-coagulable albumoses. Davidsohn and Weber use a preparation of fuller's earth as a filter. According to C. Stiepel, petroleum can be incorporated into the soap mass by adding almost enough salt to cause a salting out. The unpleasant odor of tar soaps can be gotten rid of by oxidation with KMnO<sub>4</sub>. An analysis of a tar soap from Baku by K. W. Charitshkov gave 27.3% tar acids. Davidsohn and Weber use 60% alcohol in determining the alkali as caustic and as carbonate. The soap is dissolved and both titrated; in a second sample the soap and Na<sub>2</sub>CO<sub>3</sub> are precipitated by BaCl<sub>2</sub> and the NaOH titrated directly without filtering. Fats and Oils: H. Schlegel has investigated a number of butter fats from Hungary which showed high free acids but no rancidity. He believes that strong heating over direct fire produces lactic acid. According to A. Scala the volatile fatty acids of sheep milk disappear in the ripening of cheese so that margarine is difficult to detect in cheese made from sheep milk. A. Hoffman says that margarine with more than 14% of H<sub>2</sub>O has poor keeping qualities. K. Mann makes margarine similar to butter by fermenting the milk and fat mixture with kefir after first adding lecithin. A. Bernstein adds egg yolk, lactic acid and NaHCO<sub>3</sub> for the same purpose. According to A. Leys the solid glycerides of lard never melt below 60°, but by adulteration with margarine, ox fat and others the m. p. can be lowered to 52.6°. E. Hinks states that cacao fat to the extent of as little as 5% can be detected in butter by the different crystal forms in alcoholic and ethereal solutions. P. Pollatschek has investigated olive oils from the Spanish Isles. C. Blarez makes R. acte. enard's test more sensitive by using absolute alcohol for dissolving the soap. Synthesis and Absorption of Fats: Grun and Schacht have continued their investigations on the synthesis of fats. Lauro and myristodistearin show, by the cryoscopic method, in the stable form double molecular weight, and in the labile, simple molecular weight. Myristodilaurin in both forms was

mono-molecular. Grun and Theiner have made a number of mixed unsymmetrical triglycerides from fatty acids and chlorhydrindisulphuric acid. E. Twitchell uses the sulpho-fatty acids for the synthesis of fats, 100 parts stearic acid, 10 parts glycerol, and 5 parts sulpho-fatty acids heated to 100° are said to esterify rapidly. Ulzer, Balik, and Sommer endeavor to obtain diacylate of the higher fatty acids from C16 to C22, by boiling the latter with glycerol in vacuum and extracting the product with petroleum ether. Morgan, Beger, and Westhauser have proved that an increase in the protein content in the food increases the amount of milk but lowers its fat content. C. Amberger has shown again the influence of feeding upon the composition of butter fat. The Reichert-Meissl values varied from 16 to 31, the saponification value from 219-239, and the iodine number from 21-39. S. Levites finds that the sodium salts of stearic, palmitic and oleic acid are more quickly absorbed than the fatty acids. Theoretical: According to M. Siegfeld the saturated fatty acids of butter fat consist mainly of myristic acid. Kunz-Krause and Massute obtained as a by-product in making cantharidin a fatty acid C18H36O2 of m. p. 67.25°. Bedford has investigated the unsaturated fatty acids of linseed oil and finds a solid and a liquid hexabromide by debrominating the hexabromolinolic acid and then brominating again. Linolic acid to the extent of 15.3% was found. J. Lewkowitsch obtained optically active hydrocarbons by distilling an optically active glyceride with Zn dust. Technical: The Griesheim Electron chemical works says concerning extraction with CC14, that iron apparatus must be lined with lead or tin. The loss of solvent is 0.5% of the weight of the substance extracted against 0.8% for benzine. Other good solvents are trichlorethylene and higher homologues of acetone. A. Haller believes that the esters resulting from the alcoholysis of fats can be used technically. The oleic acid ester is easily soluble in alcohol, odorless and does not become rancid; stearic and palmitic acid esters are plastic and the esters drying oils can serve as solvents. According to L. Donelly, leather fat and refuse fat can be used for manufacturing stearic acid by first treating with H2SO4 and distilling the fatty acids with 4-5 parts of fatty acids from tallow. K. Liensen emulsifies mineral oils with stearic acid amide combined with soap. The product is useful in cosmetics. N. Sulzberger forms azo colors, soluble in fats, waxes and paraffin, from stearic acid anilide.

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(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

FILE 'CAPLUS' ENTERED AT 12:24:43 ON 12 NOV 2007

L1	29 S ALKYL (2W) TIN (2W) OXIDE
L2	134285 S ESTERIF?
L3	5345836 S PREPAR? OR MAKING
L4	345927 S FATTY ACID
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L7	16983 S L3 AND L6
L8	1994 S L7 AND L2
L9	1 S L8 AND L1
L10	292770 S TIN
L11	27 S L10 AND L8

L12 26 S L11 NOT L9

=&gt; s glyceride?

L13 99258 GLYCERIDE?

=&gt; s transesterifi?

L14 23017 TRANSESTERIFI?

=&gt; s l13 and l14

L15 1734 L13 AND L14

=&gt; s l15 and l5

L16 372 L15 AND L5

=&gt; s l13 and l5 and l14

L17 372 L13 AND L5 AND L14

=&gt; s l17 and l1

L18 1 L17 AND L1

=&gt; s l18 not l9

L19 0 L18 NOT L9

=&gt; s l17 and l10

L20 4 L17 AND L10

=&gt; d l20 not l9

L9 IS NOT VALID HERE

For an explanation, enter "HELP DISPLAY":

=&gt; s l20 not l9

L21 3 L20 NOT L9

=&gt; d 112 1-3 ibib abs

L12 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2007:533941 CAPLUS

DOCUMENT NUMBER: 146:490440

TITLE: Preparation of polyester for  
electrophotographic toner

INVENTOR(S): Morimoto, Eiji; Aoki, Katsutoshi

PATENT ASSIGNEE(S): Kao Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007121455	A	20070517	JP 2005-310357	20051025
PRIORITY APPLN. INFO.:			JP 2005-310357	20051025

AB The toner is prep'd. by the steps of (1) condensing divalent  
alc. compound (C) containing  $\geq 80$  mol% of bisphenol A-alkylene  
oxide adduct (D)  $[H(OR)xO(p-C_6H_4)CMe_2(p-C_6H_4)O(RO)yH]$ ; R = C<sub>2-3</sub> alkylene; x  
+ y = 1-4] and aromatic dicarboxylic acid compound (A) in the presence of Ti  
and/or fatty acid Sn ester catalyst, (2) adding aliphatic

dicarboxylic acid to the reaction system and condensing, when the reaction ratio of (1) is  $\geq 90\%$ , and (3) adding  $\geq 3$ -valent polycarboxylic acid compound and/or polyalcl. compound to the system, when the reaction ratio [total of (1) and (2)] is  $\geq 90\%$ , in which  $(50 - 0.15B) \leq A \leq (100 - 0.2B)$  is satisfied ( $A = \text{mol\% of A to C}$ ;  $B = \text{mol\% of bisphenol A-propylene oxide adduct to total D}$ ). Electrophotog. toner containing the polyester is also claimed. The toner shows high transparency and odorless.

L12 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248084 CAPLUS  
 DOCUMENT NUMBER: 147:95307  
 TITLE: Catalytic esterification process for the preparation of completely esterified carboxylate esters of polyhydric alcohols  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar; Prakash, Om; Mathur, Gynesh Narain  
 PATENT ASSIGNEE(S): Director General, Defence Research & Development Organisation, India  
 SOURCE: Indian Pat. Appl., 26pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01486	A	20051125	IN 2003-DE1486	20031128
PRIORITY APPLN. INFO.:			IN 2003-DE1486	20031128

OTHER SOURCE(S): CASREACT 147:95307

AB An esterification process is described to provide for the prepn. of polyol esters by the esterification reaction of carboxylic acids and polyhydric alcs. in the presence of a metal oxide as the esterification catalyst. The polyol esters (e.g., pentaerythrityl tetraheptanoate) are prepd. by heating an appropriate molar ratio of polyhydric alcs. (e.g., pentaerythritol) and C5-10 fatty acids (e.g., heptanoic acid) in the presence of high-boiling hydrocarbon solvents (e.g., toluene) and a main group metal oxide catalyst preferably in a lower valent state in a refluxing assembly fitted with a Dean-Stark assembly. The Dean-Stark assembly is used to observe the liberated amount of water during reaction, which helps to know the completion of the reaction with its quantity.

L12 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:248073 CAPLUS  
 DOCUMENT NUMBER: 147:365175  
 TITLE: A process for the preparation of neutral diesters  
 INVENTOR(S): Bisaria, Chandra Swaroop; Saxena, Arvind Kumar; Prakash, Om; Mathur, Gynesh Narain  
 PATENT ASSIGNEE(S): Director General, Defence Research & Development, India  
 SOURCE: Indian Pat. Appl., 15pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 2003DE01379	A	20051125	IN 2003-DE1379	20031110
PRIORITY APPLN. INFO.:			IN 2003-DE1379	20031110

OTHER SOURCE(S): CASREACT 147:365175

AB The present invention relates to a process for the prepn. of complete neutral diesters by the esterification reaction of acids and alcs. in the presence of a metal oxide as catalyst. The complete neutral esters are prep'd. by heating alcs. and fatty acids in the presence or absence of hydrocarbon solvents with a metal oxide catalyst which may belong to any one of the metals such as titanium, zinc or tin preferably in a reduced state with the system in a refluxing assembly fitted with a dean-stark assembly.

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(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

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L1	29 S ALKYL (2W) TIN (2W) OXIDE
L2	134285 S ESTERIF?
L3	5345836 S PREPAR? OR MAKING
L4	345927 S FATTY ACID
L5	867329 S ALCOHOL
L6	43922 S L5 AND L4
L7	16983 S L3 AND L6
L8	1994 S L7 AND L2
L9	1 S L8 AND L1
L10	292770 S TIN
L11	27 S L10 AND L8
L12	26 S L11 NOT L9
L13	99258 S GLYCERIDE?
L14	23017 S TRANSESTERIFI?
L15	1734 S L13 AND L14
L16	372 S L15 AND L5
L17	372 S L13 AND L5 AND L14
L18	1 S L17 AND L1
L19	0 S L18 NOT L9
L20	4 S L17 AND L10
L21	3 S L20 NOT L9

=&gt; s ester

610462 ESTER

448188 ESTERS

SYSTEM LIMITS EXCEEDED - SEARCH ENDED

The search profile you entered was too complex or gave too many answers. Simplify or subdivide the query and try again. If you have exceeded the answer limit, enter DELETE HISTORY at an arrow prompt (>) to remove all previous answers sets and begin at L1. Use the SAVE command to store any important profiles or answer sets before using DELETE HISTORY.

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L10 292770 S TIN  
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L12 26 S L11 NOT L9  
L13 99258 S GLYCERIDE?  
L14 23017 S TRANSESTERIFI?  
L15 1734 S L13 AND L14  
L16 372 S L15 AND L5  
L17 372 S L13 AND L5 AND L14  
L18 1 S L17 AND L1  
L19 0 S L18 NOT L9  
L20 4 S L17 AND L10  
L21 3 S L20 NOT L9

=> l14 and 15 and 13

L14 IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s l14 15 and 13

MISSING OPERATOR L14 L5

The search profile that was entered contains terms or  
nested terms that are not separated by a logical operator.

=> s l14 and 15 and 13

L22 4015 L14 AND L5 AND L3

=> s l14 and l13 and 13

L23 901 L14 AND L13 AND L3

=> s l23 and 15

L24 249 L23 AND L5

=> s l24 and l10

L25 4 L24 AND L10

=> s l25 not l20

L26 0 L25 NOT L20

=> s fatty (2w) acid (2w) alkyl (2w) ester?

391500 FATTY

14 FATTIES

391504 FATTY  
(FATTY OR FATTIES)

4474238 ACID

1600215 ACIDS  
4978877 ACID  
(ACID OR ACIDS)  
599589 ALKYL  
6474 ALKYLS  
602507 ALKYL  
(ALKYL OR ALKYLS)

944688 ESTER?  
L27 1029 FATTY (2W) ACID (2W) ALKYL (2W) ESTER?

=> s 127 and 114  
L28 205 L27 AND L14

=> s 128 and 113  
L29 73 L28 AND L13

=> s 129 and 15  
L30 51 L29 AND L5

=> s 130 and 110  
L31 1 L30 AND L10

=> s 131 and not 118  
MISSING TERM 'AND NOT'  
The search profile that was entered contains a logical operator followed immediately by another operator.

=> s 131 not 118  
L32 0 L31 NOT L18

=> d his

(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

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L1 29 S ALKYL (2W) TIN (2W) OXIDE  
L2 134285 S ESTERIF?  
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L9 1 S L8 AND L11  
L10 292770 S TIN  
L11 27 S L10 AND L8  
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L18 1 S L17 AND L1  
L19 0 S L18 NOT L9  
L20 4 S L17 AND L10  
L21 3 S L20 NOT L9  
L22 4015 S L14 AND L5 AND L3  
L23 901 S L14 AND L13 AND L3

L24 249 S L23 AND L5  
 L25 4 S L24 AND L10  
 L26 0 S L25 NOT L20  
 L27 1029 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
 L28 205 S L27 AND L14  
 L29 73 S L28 AND L13  
 L30 51 S L29 AND L5  
 L31 1 S L30 AND L10  
 L32 0 S L31 NOT L18

=> s metal (2w) oxide  
 1786914 METAL  
 891690 METALS  
 2161617 METAL  
 (METAL OR METALS)  
 1811774 OXIDE  
 351741 OXIDES  
 1911053 OXIDE  
 (OXIDE OR OXIDES)  
 L33 122190 METAL (2W) OXIDE

=> s 133 and 130  
 L34 1 L33 AND L30

=> s 134 not 118  
 L35 1 L34 NOT L18

=> d 135 ibib abs

L35 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2006:847790 CAPLUS  
 DOCUMENT NUMBER: 145:273664  
 TITLE: Method for producing fatty acid  
 alkyl esters and/or glycerin  
 INVENTOR(S): Oku, Tomoharu; Moriguchi, Toshimitsu; Akatsuka, Takeo;  
 Nonoguchi, Masanori  
 PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan; Research Institute  
 of Innovative Technology for the Earth  
 SOURCE: PCT Int. Appl., 61pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006088254	A2	20060824	WO 2006-JP303512	20060220
WO 2006088254	A3	20070208		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,				

CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
 GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM

JP 2006225578	A	20060831	JP 2005-43619	20050221
JP 2006225352	A	20060831	JP 2005-43620	20050221
JP 2006225353	A	20060831	JP 2005-43621	20050221
JP 2007169443	A	20070705	JP 2005-368602	20051221
AU 2006214917	A1	20060824	AU 2006-214917	20060220
CA 2596105	A1	20060824	CA 2006-2596105	20060220
EP 1851294	A2	20071107	EP 2006-714651	20060220

R: DE, FR

PRIORITY APPLN. INFO.:	JP 2005-43619	A 20050221
	JP 2005-43620	A 20050221
	JP 2005-43621	A 20050221
	JP 2005-368602	A 20051221
	WO 2006-JP303512	W 20060220

AB The invention provides a production method using a catalyst which can substantially suppress leaching of active metal components and exhibit high activity for both reactions of transesterification of glycerides and esterification of free fatty acids each contained in a fat or oil; and the catalyst. The method comprises a step of bringing a fat or oil into contact with an alc. in the presence of a catalyst, wherein the catalyst is at least one catalyst selected from: (I) a metal oxide having an ilmenite structure and/or a slyrankite structure; (II) an oxide containing a metallic element belonging to the Group 12 and a metallic element belonging to the Group 4; (III) a mixed oxide containing a metallic element belonging to the Group 12 and a tetravalent transition metallic element; (IV) a metal oxide containing Zr and at least one metallic element selected from the group consisting of metallic elements belonging to the Groups 4, 5 and 8; or/and (V) a metal oxide containing anatase type titanium oxide and/or rutile type titanium oxide, and the metal oxide containing a sulfur component of 700 ppm or less.

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 L21 3 S L20 NOT L9  
 L22 4015 S L14 AND L5 AND L3  
 L23 901 S L14 AND L13 AND L3  
 L24 249 S L23 AND L5  
 L25 4 S L24 AND L10  
 L26 0 S L25 NOT L20  
 L27 1029 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
 L28 205 S L27 AND L14  
 L29 73 S L28 AND L13  
 L30 51 S L29 AND L5  
 L31 1 S L30 AND L10  
 L32 0 S L31 NOT L18  
 L33 122190 S METAL (2W) OXIDE  
 L34 1 S L33 AND L30  
 L35 1 S L34 NOT L18

=> file marpat

	SINCE FILE ENTRY	TOTAL SESSION
COST IN U.S. DOLLARS		
FULL ESTIMATED COST	176.18	176.39
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-31.98	-31.98

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FILE CONTENT: 1961-PRESENT VOL 147 ISS 20 (20071109/ED)

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MOST RECENT CITATIONS FOR PATENTS FROM MAJOR ISSUING AGENCIES  
(COVERAGE TO THESE DATES IS NOT COMPLETE) :

US 2007225456 27 SEP 2007  
 DE 102007008940 20 SEP 2007  
 EP 1837903 26 SEP 2007  
 JP 2007254395 04 OCT 2007  
 WO 2007113356 11 OCT 2007  
 GB 2435830 12 SEP 2007  
 FR 2898810 28 SEP 2007  
 RU 2307151 27 SEP 2007  
 CA 2539418 13 SEP 2007

Expanded G-group definition display now available.

=> s glyceride?  
 L36 2 GLYCERIDE?

=> s transesterifi?  
 L37 1 TRANSESTERIFI?

=> s 136 and 137

L38 0 L36 AND L37

=> file casreact			
COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION	
FULL ESTIMATED COST	4.74	181.13	
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION	
CA SUBSCRIBER PRICE	0.00	-31.98	

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FILE CONTENT:1840 - 10 Nov 2007 VOL 147 ISS 21

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\*\*\*\*\*  
 \*  
 \* CASREACT now has more than 13.8 million reactions \*  
 \*  
 \*\*\*\*\*

Some CASREACT records are derived from the ZIC/VINITI database (1974-1999) provided by InfoChem, INPI data prior to 1986, and Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s glyceride?  
 L39 437 GLYCERIDE?  
  
 => s transesterifi?  
 L40 3774 TRANSESTERIFI?  
  
 => s alcohol  
 18485 ALCOHOL  
 22502 ALCOHOLS  
 L41 35978 ALCOHOL  
 (ALCOHOL OR ALCOHOLS)  
  
 => s prepar? or making  
 174851 PREPAR?  
 2098 MAKING  
 L42 176252 PREPAR? OR MAKING  
  
 => s tin  
 8209 TIN  
 27 TINS  
 L43 8220 TIN

(TIN OR TINS)

=> s 140 and 139 and 141  
L44 10 L40 AND L39 AND L41

=> s 144 and 143  
L45 0 L44 AND L43

=> s metal (2w) oxide  
49216 METAL  
7802 METALS  
51443 METAL  
(METAL OR METALS)  
36648 OXIDE  
10026 OXIDES  
38845 OXIDE  
(OXIDE OR OXIDES)  
L46 1448 METAL (2W) OXIDE

=> s 146 and 139 and 141 and 142  
L47 0 L46 AND L39 AND L41 AND L42

=> d his

(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

FILE 'CAPLUS' ENTERED AT 12:24:43 ON 12 NOV 2007  
L1 29 S ALKYL (2W) TIN (2W) OXIDE  
L2 134285 S ESTERIF?  
L3 5345836 S PREPAR? OR MAKING  
L4 345927 S FATTY ACID  
L5 867329 S ALCOHOL  
L6 43922 S L5 AND L4  
L7 16983 S L3 AND L6  
L8 1994 S L7 AND L2  
L9 1 S L8 AND L1  
L10 292770 S TIN  
L11 27 S L10 AND L8  
L12 26 S L11 NOT L9  
L13 99258 S GLYCERIDE?  
L14 23017 S TRANSESTERIFI?  
L15 1734 S L13 AND L14  
L16 372 S L15 AND L5  
L17 372 S L13 AND L5 AND L14  
L18 1 S L17 AND L1  
L19 0 S L18 NOT L9  
L20 4 S L17 AND L10  
L21 3 S L20 NOT L9  
L22 4015 S L14 AND L5 AND L3  
L23 901 S L14 AND L13 AND L3  
L24 249 S L23 AND L5  
L25 4 S L24 AND L10  
L26 0 S L25 NOT L20  
L27 1029 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
L28 205 S L27 AND L14  
L29 73 S L28 AND L13  
L30 51 S L29 AND L5  
L31 1 S L30 AND L10

L32 0 S L31 NOT L18  
 L33 122190 S METAL (2W) OXIDE  
 L34 1 S L33 AND L30  
 L35 1 S L34 NOT L18

FILE 'MARPAT' ENTERED AT 12:55:01 ON 12 NOV 2007  
 L36 2 S GLYCERIDE?  
 L37 1 S TRANSESTERIFI?  
 L38 0 S L36 AND L37

FILE 'CASREACT' ENTERED AT 12:56:07 ON 12 NOV 2007  
 L39 437 S GLYCERIDE?  
 L40 3774 S TRANSESTERIFI?  
 L41 35978 S ALCOHOL  
 L42 176252 S PREPAR? OR MAKING  
 L43 8220 S TIN  
 L44 10 S L40 AND L39 AND L41  
 L45 0 S L44 AND L43  
 L46 1448 S METAL (2W) OXIDE  
 L47 0 S L46 AND L39 AND L41 AND L42

=> s fatty (2w) acid (2w) alkyl (2w) ester?  
 3088 FATTY  
 222500 ACID  
 69484 ACIDS  
 235567 ACID  
 (ACID OR ACIDS)  
 82715 ALKYL  
 454 ALKYLS  
 82875 ALKYL  
 (ALKYL OR ALKYLS)  
 107402 ESTER?  
 L48 30 FATTY (2W) ACID (2W) ALKYL (2W) ESTER?

=> s 148 and 143  
 L49 1 L48 AND L43

=> d 149 ibib abs

L49 ANSWER 1 OF 1 CASREACT COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 117:233445 CASREACT  
 TITLE: Preparation of aliphatic nitriles  
 INVENTOR(S): Akikubo, Akira; Takaoka, Hiromitsu  
 PATENT ASSIGNEE(S): Lion Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04208260	A	19920729	JP 1990-337253	19901130
JP 2893216	B2	19990517		
PRIORITY APPLN. INFO.:			JP 1990-337253	19901130
AB The title compds. are prepared by treating fatty acids and/or their alkyl				

esters with NH<sub>3</sub> in gas-phase in the presence of catalysts containing  $\geq 1$  ZnO, Ta<sub>2</sub>O<sub>5</sub>, Ga<sub>2</sub>O<sub>3</sub>, In<sub>2</sub>O<sub>3</sub>, Sc<sub>2</sub>O<sub>3</sub>, Nb<sub>2</sub>O<sub>5</sub>, HfO<sub>2</sub>, Fe oxides, ZnO, and Sn oxides. A reactor containing ZnO was fed with NH<sub>3</sub> and Me laurate at 300° gave 98.5% lauronitrile.

=> s 148 and 142  
 L50 23 L48 AND L42

=> s 150 and 146  
 L51 1 L50 AND L46

=> l 51 not 149  
 L IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.  
 For a list of commands available to you in the current file, enter  
 "HELP COMMANDS" at an arrow prompt (>).

=> s 151 not 149  
 L52 0 L51 NOT L49

=> d his

(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

FILE 'CAPLUS' ENTERED AT 12:24:43 ON 12 NOV 2007

L1 29 S ALKYL (2W) TIN (2W) OXIDE  
 L2 134285 S ESTERIF?  
 L3 5345836 S PREPAR? OR MAKING  
 L4 345927 S FATTY ACID  
 L5 867329 S ALCOHOL  
 L6 43922 S L5 AND L4  
 L7 16983 S L3 AND L6  
 L8 1994 S L7 AND L2  
 L9 1 S L8 AND L1  
 L10 292770 S TIN  
 L11 27 S L10 AND L8  
 L12 26 S L11 NOT L9  
 L13 99258 S GLYCERIDE?  
 L14 23017 S TRANSESTERIFI?  
 L15 1734 S L13 AND L14  
 L16 372 S L15 AND L5  
 L17 372 S L13 AND L5 AND L14  
 L18 1 S L17 AND L1  
 L19 0 S L18 NOT L9  
 L20 4 S L17 AND L10  
 L21 3 S L20 NOT L9  
 L22 4015 S L14 AND L5 AND L3  
 L23 901 S L14 AND L13 AND L3  
 L24 249 S L23 AND L5  
 L25 4 S L24 AND L10  
 L26 0 S L25 NOT L20  
 L27 1029 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
 L28 205 S L27 AND L14  
 L29 73 S L28 AND L13  
 L30 51 S L29 AND L5  
 L31 1 S L30 AND L10  
 L32 0 S L31 NOT L18

L33 122190 S METAL (2W) OXIDE  
 L34 1 S L33 AND L30  
 L35 1 S L34 NOT L18

FILE 'MARPAT' ENTERED AT 12:55:01 ON 12 NOV 2007  
 L36 2 S GLYCERIDE?  
 L37 1 S TRANSESTERIFI?  
 L38 0 S L36 AND L37

FILE 'CASREACT' ENTERED AT 12:56:07 ON 12 NOV 2007  
 L39 437 S GLYCERIDE?  
 L40 3774 S TRANSESTERIFI?  
 L41 35978 S ALCOHOL  
 L42 176252 S PREPAR? OR MAKING  
 L43 8220 S TIN  
 L44 10 S L40 AND L39 AND L41  
 L45 0 S L44 AND L43  
 L46 1448 S METAL (2W) OXIDE  
 L47 0 S L46 AND L39 AND L41 AND L42  
 L48 30 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
 L49 1 S L48 AND L43  
 L50 23 S L48 AND L42  
 L51 1 S L50 AND L46  
 L52 0 S L51 NOT L49

=> file caplus		SINCE FILE	TOTAL
COST IN U.S. DOLLARS		ENTRY	SESSION
FULL ESTIMATED COST		29.77	210.90
DISCOUNT AMOUNTS, (FOR QUALIFYING ACCOUNTS)		SINCE FILE	TOTAL
		ENTRY	SESSION
CA SUBSCRIBER PRICE		-0.73	-32.71

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 FILE LAST UPDATED: 11 Nov 2007 (20071111/ED)

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=> s biodiesel  
 3271 BIODIESEL  
 89 BIODIESELS  
 L53 3281 BIODIESEL  
 (BIODIESEL OR BIODIESELS)

=> s 153 and tin  
 292347 TIN  
 677 TINS  
 292770 TIN  
 (TIN OR TINS)  
 L54 21 L53 AND TIN

=> s 154 and ester  
 610462 ESTER  
 448188 ESTERS  
 846722 ESTER  
 (ESTER OR ESTERS)  
 L55 13 L54 AND ESTER

=> d 155 ibib abs 1-13

L55 ANSWER 1 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2007:746830 CAPLUS  
 DOCUMENT NUMBER: 147:325989  
 TITLE: 1-n-Butyl-3-methylimidazolium tetrachloro-indate  
 (BMI·InCl<sub>4</sub>) as a media for the synthesis of  
 biodiesel from vegetable oils  
 AUTHOR(S): DaSilveira Neto, Brenno Amaro; Alves, Melquizedeque  
 B.; Lapis, Alexandre A. M.; Nachtigall, Fabiane M.;  
 Eberlin, Marcos N.; Dupont, Jairton; Suarez, Paulo A.  
 Z.  
 CORPORATE SOURCE: Centro de Pesquisas em Biologia Molecular e Funcional,  
 PUCRS, Brazil  
 SOURCE: Journal of Catalysis (2007), 249(2), 154-161  
 CODEN: JCTLA5; ISSN: 0021-9517  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB [Sn(3-hydroxy-2-methyl-4-pyrone)2(H<sub>2</sub>O)<sub>2</sub>] immobilized in  
 1-n-butyl-3-methylimidazolium tetrachloro-indate (BMI·InCl<sub>4</sub>) ionic  
 liquid forms an effective biphasic catalytic system for the production of  
 biodiesel from the alcoholysis of soybean oil. ESI-MS expts.  
 during the transesterification reaction indicate that the reaction may  
 proceed through the formation of a cationic species formed through the  
 substitution of one pyrone ligand by one alc. mol., followed by  
 coordination of the carboxylate compound to tin. The adduct thus  
 formed undergoes transesterification with liberation of the catalytic  
 active species.  
 REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2006:1321812 CAPLUS  
 DOCUMENT NUMBER: 146:232471  
 TITLE: Methanolysis of soybean oil in the presence of  
 tin(IV) complexes  
 AUTHOR(S): Ferreira, Davi A. C.; Meneghetti, Mario R.;

CORPORATE SOURCE: Meneghetti, Simoni M. P.; Wolf, Carlos R.  
 Instituto de Quimica e Biotecnologia, Universidade  
 Federal de Alagoas, Maceio, AL-57072-970, Brazil

SOURCE: Applied Catalysis, A: General (2007), 317(1), 58-61  
 CODEN: ACAGE4; ISSN: 0926-860X

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In this work, we present the results obtained from the methanolysis of soybean oil using Sn(IV)-based com. compds. as catalysts. In order to characterize the behavior of such catalytic systems in the reaction medium, different reaction times, temps. and catalyst amts. were used. The efficiency of the catalytic system in terms of yield (% of fatty acid Me esters formed) varies in the following order: dibutyltin dilaurate > di-n-butyl-oxo-stannane > modified di-n-butyl-oxo-stannane > butylstannoic acid. Parameters as degree of solubility of the catalyst and rate stirring were also investigated.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:800498 CAPLUS

DOCUMENT NUMBER: 145:232879

TITLE: Fuel composition for internal combustion engine containing hydroxylated biodiesel oil for improving lubrication of low-sulfur fuel

INVENTOR(S): Yang, Zheng; Du, Zexue; Hu, Jianbo; Min, Enze

PATENT ASSIGNEE(S): Sinopec Corp., Peop. Rep. China; Research Institute of Petroleum Processing, Sinopec Corp.

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1814715	A	20060809	CN 2005-10004960	20050131
PRIORITY APPLN. INFO.:			CN 2005-10004960	20050131

AB The title fuel composition is composed of (by weight) a large amount of fuel oil,

and hydroxylated fatty acid ester with a formula of R1(OH)nCOOR2 0.01-1% (R1 = C5-C25 alkyl; R2 = C1-C8 alkyl; n = an integer of 0-12).

The weight of hydroxylated fatty acid ester (n is not 0) exceeds

the total weight of fatty acid ester by 40%. The hydroxylated

fatty acid ester is prepared from biodiesel oil by

catalytic oxidn with peroxides. By adding hydroxylated biodiesel

oil with a usage amount of 0.01-1%, lubrication of low-sulfur fuel can be improved.

L55 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:395334 CAPLUS

DOCUMENT NUMBER: 144:471057

TITLE: Manufacture of alcohol-based biodiesel oil

INVENTOR(S): Liu, Hongsheng; Li, Tianwen; Lin, Chaoyang; Liu, Minggang; Li, Qing; Luo, Guangbi; Cai, Yajuan

PATENT ASSIGNEE(S): Lutianhua (Group) Inc., Peop. Rep. China

SOURCE: Faming Zhuanli Shengqing Gongkai Shuomingshu, 5 pp.  
 CODEN: CNXXEV  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1760343	A	20060419	CN 2005-10021972	20051101
PRIORITY APPLN. INFO.:			CN 2005-10021972	20051101

AB The title biodiesel oil is manufactured from (by weight%): animal and vegetable oils and fats 1, methanol or other lower alcs. 0.1-5, supported catalyst 0.02-0.2, and cetane value accelerating agent 0.005-0.03. The biodiesel oil is manufactured by: (1) carrying out alcoholysis on animal and vegetable oils and fats with methanol or other lower alc. in the presence of supported catalyst at 30-220 °C for 1-6 h, filtering to remove catalyst, standing to obtain lower layer glycerol phase and upper Me ester phase, and distilling to obtain glycerol as byproduct, (2) distilling Me ester phase to obtain Me fatty acid ester as biodiesel oil, and mixing the biodiesel oil with methanol and cetane value accelerating agent to obtain the final product. This biodiesel oil has the advantages of simple process, low cost, high low-temperature starting properties, and low exhaust emission.

L55 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2006:312477 CAPLUS  
 DOCUMENT NUMBER: 145:30849  
 TITLE: Triorganotin 4-isopropylbenzoate as model transesterification catalysts for triorganotin carboxylates grafted to cross-linked polystyrene  
 AUTHOR(S): Angiolini, Luigi; Caretti, Daniele; Mazzocchetti, Laura; Salatelli, Elisabetta; Willem, Rudolph; Biesemans, Monique  
 CORPORATE SOURCE: Dipartimento di Chimica Industriale e dei Materiali, University of Bologna, Bologna, I-40136, Italy  
 SOURCE: Journal of Organometallic Chemistry (2006), 691(9), 1965-1972  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 145:30849

AB Starting from 4-isopropyl-benzoic acid, three new triorganotin carboxylates bearing Me, Bu and Ph substituents at tin, resp., were prepared and fully characterized by spectroscopic and thermal techniques, with particular regard to the coordination number of tin atom, in solution as well as in the solid state. The triorganotin compds., tested as transesterification catalysts in the reaction between Et acetate and primary, secondary or tertiary alc., resp., displayed, as expected, a strong decrease of activity on passing from the primary to the tertiary alc. reactant. Different activities by the tin carboxylates were also observed in the reaction between primary alc. and Et acetate. The reaction mechanism, as elucidated by Sn NMR, involves coordination of both ester substrate and alc. reactant to the triorganotin compound, the reaction conversion appearing related not only to the Lewis acidity of the tin atom, but also to the nature of the reactants. Preliminary

catalytic tests were also carried out in the reaction between glyceryl tridodecanoate (as a model of natural triglyceride) and ethanol, mimicking the preparation of biodiesel fuel. Although in this case lower conversions were obtained with respect to the reactions on Et acetate, the catalytic activity of organotin derivs. appears considerable.

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:99973 CAPLUS

DOCUMENT NUMBER: 144:173129

TITLE: Manufacture of fatty acid esters from fats/oils and superheated alcohol vapors

INVENTOR(S): Ito, Shoichi; Morita, Minoru; Tomashino, Katsuhiko; Kosakada, Kiyoshi; Kamioka, Masao

PATENT ASSIGNEE(S): I.C.S. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006028146	A	20060202	JP 2004-231676	20040712
PRIORITY APPLN. INFO.:			JP 2004-231676	20040712

AB Fatty acid esters, useful as biodiesel fuel (no data), are manufactured from fats/oils and monohydric alcs., wherein an excess amount of the alcs. used as superheated vapors and a means to circulate the superheated alc. vapor is formed. Alternatively, fatty acid esters are manufactured from fatty fats/oils and alcs. in the presence of solid catalysts at 0.090-0.405 MPa (preferably 0.102-0.150 MPa) and 150-350° (preferably 180-290°). Construction of apparatus for the manufacture is also described. Thus, rape oil and superheated MeOH vapor (292°) were continuously fed to a reactor packed with Raschig rings and Pd thin plates at 287° while circulating the MeOH vapor to give esters containing Me linolenate 11, Me linoleate 27, Me oleate 40, and others (monoglycerides, diglycerides, etc.) 22%.

L55 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1319904 CAPLUS

DOCUMENT NUMBER: 144:215833

TITLE: Transesterification of crude palm kernel oil and crude coconut oil by different solid catalysts

AUTHOR(S): Jitputti, Jaturong; Kitiyanan, Boonyarach; Rangsunvigit, Pramoch; Bunyakiat, Kunchana; Attanatho, Lalita; Jenvanitpanjakul, Peesamai

CORPORATE SOURCE: The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

SOURCE: Chemical Engineering Journal (Amsterdam, Netherlands) (2006), 116(1), 61-66

CODEN: CMEJAJ; ISSN: 1385-8947

Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB This work reports on the preliminary results of using several acidic and

basic solids, such as ZrO<sub>2</sub>, ZnO, SO<sub>42-</sub>/SnO<sub>2</sub>, SO<sub>42-</sub>/ZrO<sub>2</sub>, KNO<sub>3</sub>/KL zeolite and KNO<sub>3</sub>/ZrO<sub>2</sub> as heterogeneous catalysts for crude palm kernel oil (PKO) and crude coconut oil (CCO) transesterification with methanol. It was found that ZnO and SO<sub>42-</sub>/ZrO<sub>2</sub> exhibited the highest activity for both PKO and CCO transesterification. In the case of SO<sub>42-</sub>/ZrO<sub>2</sub>, only 1% of this acidic solid was needed to catalyze the reaction, and resulted in fatty acid Me esters content higher than 90%. Moreover, a study of the catalyst's recyclability indicated that the spent SO<sub>42-</sub>/ZrO<sub>2</sub> cannot be directly reused for the transesterification. However, this spent catalyst can be easily regenerated and the same activity can be obtained.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:612439 CAPLUS  
 DOCUMENT NUMBER: 143:117808  
 TITLE: Improved process for preparing fatty acid alkyl esters using as biodiesel  
 INVENTOR(S): Gupta, Ashok Kumar; Bhatnagar, Ajay Kumar; Kaul, Savita  
 PATENT ASSIGNEE(S): Council of Scientific and Industrial Research, India  
 SOURCE: PCT Int. Appl., 16 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005063954	A1	20050714	WO 2003-IN416	20031230
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2552371	A1	20050714	CA 2003-2552371	20031230
AU 2003290414	A1	20050721	AU 2003-290414	20031230
EP 1711588	A1	20061018	EP 2003-782777	20031230
R: AT, DE, FR, GB, IT				
BR 2003018651	A	20061128	BR 2003-18651	20031230
CN 1894390	A	20070110	CN 2003-80111007	20031230
IN 2004DN00397	A	20060310	IN 2004-DN397	20040220
PRIORITY APPLN. INFO.:			WO 2003-IN416	W 20031230

AB Fatty acid alkyl esters suitable for use as biodiesel are produced by a single step esterification of free fatty acids and transesterification of triglycerides from vegetable oils or animal fats or combinations thereof with a lower alc. (e.g. methanol) in presence of alkyl tin oxide as catalyst. Thus, such an improved process comprises the steps of, a. reacting fatty acid glycerides with an alc. having 1-4 carbon atoms in the molar ratio of 3:1 to 30:1 of fatty acids and triglycerides resp., at a temperature ranging between 70-300°, pressure in the range of 1-30 bar, in presence of a organometallic

catalytic compound of Tin with concentration of catalyst is in the range of 0.01 to 3 weight percent of the fatty acid glycerides; b. obtaining ester with glycerol; c. separating the glycerin from the fatty acid alkyl ester as immiscible phase by decantation; d. purifying the fatty acid alkyl esters by washing with water, and e. washed ester is treated with an basic adsorbent to obtain biodiesel.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:523107 CAPLUS  
 DOCUMENT NUMBER: 143:64362  
 TITLE: Method for improving the operation of combustion particulate filters  
 INVENTOR(S): Schwab, Scott D.; Cunningham, Lawrence Joseph; Morris, John D.; Evans, Joel A.  
 PATENT ASSIGNEE(S): Afton Chemical Corporation, USA  
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005126157	A1	20050616	US 2003-732658	20031210
US 7111591	B2	20060926		
CA 2487749	A1	20050610	CA 2004-2487749	20041118
EP 1541853	A2	20050615	EP 2004-28050	20041125
EP 1541853	A3	20070613		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR, IS, YU				

PRIORITY APPLN. INFO.: US 2003-732658 A 20031210  
 AB A method is disclosed that improves the operation of fuel combustion systems utilizing particulate filters. The method includes the combustion of a fuel emulsion in a fuel combustion system having a particulate filter. The fuel emulsion may comprise water and a fuel with the emulsion including a metal-containing compound, such as, for example, a manganese-containing compound

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:188147 CAPLUS  
 TITLE: Characterizing catalysts for the transesterification of triacetin and methanol  
 AUTHOR(S): McCaughey, Matthew E.; Goodwin, James G.  
 CORPORATE SOURCE: Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA, 70803, USA  
 SOURCE: Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, 2005 (2005), CHED-1016. American Chemical Society: Washington, D. C.  
 CODEN: 69GQMP

DOCUMENT TYPE: Conference; Meeting Abstract  
 LANGUAGE: English  
 AB Biodiesel from vegetable oil is renewable, biodegradable, and has low emissions profile; thus it has the potential to be a very valuable energy source. Currently biodiesel is produced with homogeneous catalysts and is relatively expensive. To make the cost of production competitive with diesel from petroleum, heterogeneous acid and base catalysts are considered. Because triglycerides are a major part of fats and oils, this project focuses on solid catalysts that can effectively convert a model triglyceride (triacetin) into combustible Me esters. Results show that the acid catalysts sulfated zirconia and iron-promoted sulfated zirconia are effective catalysts with 48% and 22% conversion of triacetin to products, resp. The other acid catalyst, sulfated tin oxide, and the base catalysts, magnesium oxide and rehydrated magnesium oxide, were relatively non-reactive.

L55 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:181782 CAPLUS  
 DOCUMENT NUMBER: 142:282594  
 TITLE: Fuel compositions employing catalyst combustion structure  
 INVENTOR(S): Orr, William C.  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 65 pp., Cont.-in-part of U.S. Ser. No. 986,891.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 6  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005044778	A1	20050303	US 2003-722127	20031124
US 6652608	B1	20031125	US 1997-986891	19971208
PRIORITY APPLN. INFO.:			US 1997-986891	A2 19971208
			US 1994-205945	B2 19940302
			US 1996-763696	B2 19961209

AB Metallic vapor phase fuel compns. relating to a broad spectrum of pollution reducing, improved combustion performance, and enhanced stability fuel compns. for use in jet, aviation, turbine, diesel, gasoline, and other combustion applications include co-combustion agents preferably including trimethoxymethylsilane.

L55 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:976190 CAPLUS  
 DOCUMENT NUMBER: 142:41299  
 TITLE: Biodiesel fuel production with solid superacid catalysis in fixed bed reactor under atmospheric pressure  
 AUTHOR(S): Furuta, Satoshi; Matsuhashi, Hiromi; Arata, Kazushi  
 CORPORATE SOURCE: Petroleum Refining Research & Technology Center, Japan Energy Corporation, Toda, Saitama, 335-8502, Japan  
 SOURCE: Catalysis Communications (2004), 5(12), 721-723  
 CODEN: CCAOAC; ISSN: 1566-7367  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Solid superacid catalysts of sulfated tin and zirconium oxides and tungstated zirconia are prepared and evaluated in the trans-esterification of soybean oil with methanol at 200-300 °C and the esterification of n-octanoic acid with methanol at 175-200 °C. Tungstated zirconia-alumina is a promising solid acid catalyst for the production of biodiesel fuels from soybean oil because of its high performance in the conversions over 90% for both of the esterifications.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:376128 CAPLUS  
 DOCUMENT NUMBER: 141:143092  
 TITLE: Two-step preparation for catalyst-free biodiesel fuel production: Hydrolysis and methyl esterification  
 AUTHOR(S): Kusdiana, Dadan; Saka, Shiro  
 CORPORATE SOURCE: Graduate School of Energy Science, Kyoto University, Kyoto, 606-8501, Japan  
 SOURCE: Applied Biochemistry and Biotechnology (2004), 113-116, 781-791  
 CODEN: ABIBDL; ISSN: 0273-2289  
 PUBLISHER: Humana Press Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Biodiesel fuel was prepared by a two-step reaction: hydrolysis and Me esterification. Hydrolysis was carried out at a subcrit. state of water to obtain fatty acids from triglycerides of rapeseed oil, while the Me esterification of the hydrolyzed products of triglycerides was treated near the supercrit. methanol condition to achieve fatty acid Me esters. Consequently, the two-step preparation converts rapeseed oil to fatty acid Me esters in considerably shorter reaction time and milder reaction condition than the direct supercrit. methanol treatment. The optimum reaction condition in this two-step preparation was 270° and 20 min for hydrolysis and Me esterification, resp. Variables affecting the yields in hydrolysis and Me esterification are discussed.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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(FILE 'HOME' ENTERED AT 12:24:02 ON 12 NOV 2007)

FILE 'CPLUS' ENTERED AT 12:24:43 ON 12 NOV 2007  
 L1 29 S ALKYL (2W) TIN (2W) OXIDE  
 L2 134285 S ESTERIF?  
 L3 5345836 S PREPAR? OR MAKING  
 L4 345927 S FATTY ACID  
 L5 867329 S ALCOHOL  
 L6 43922 S L5 AND L4  
 L7 16983 S L3 AND L6  
 L8 1994 S L7 AND L2  
 L9 1 S L8 AND L1  
 L10 292770 S TIN  
 L11 27 S L10 AND L8  
 L12 26 S L11 NOT L9

L13 99258 S GLYCERIDE?  
L14 23017 S TRANSESTERIFI?  
L15 1734 S L13 AND L14  
L16 372 S L15 AND L5  
L17 372 S L13 AND L5 AND L14  
L18 1 S L17 AND L1  
L19 0 S L18 NOT L9  
L20 4 S L17 AND L10  
L21 3 S L20 NOT L9  
L22 4015 S L14 AND L5 AND L3  
L23 901 S L14 AND L13 AND L3  
L24 249 S L23 AND L5  
L25 4 S L24 AND L10  
L26 0 S L25 NOT L20  
L27 1029 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
L28 205 S L27 AND L14  
L29 73 S L28 AND L13  
L30 51 S L29 AND L5  
L31 1 S L30 AND L10  
L32 0 S L31 NOT L18  
L33 122190 S METAL (2W) OXIDE  
L34 1 S L33 AND L30  
L35 1 S L34 NOT L18

FILE 'MARPAT' ENTERED AT 12:55:01 ON 12 NOV 2007

L36 2 S GLYCERIDE?  
L37 1 S TRANSESTERIFI?  
L38 0 S L36 AND L37

FILE 'CASREACT' ENTERED AT 12:56:07 ON 12 NOV 2007

L39 437 S GLYCERIDE?  
L40 3774 S TRANSESTERIFI?  
L41 35978 S ALCOHOL  
L42 176252 S PREPAR? OR MAKING  
L43 8220 S TIN  
L44 10 S L40 AND L39 AND L41  
L45 0 S L44 AND L43  
L46 1448 S METAL (2W) OXIDE  
L47 0 S L46 AND L39 AND L41 AND L42  
L48 30 S FATTY (2W) ACID (2W) ALKYL (2W) ESTER?  
L49 1 S L48 AND L43  
L50 23 S L48 AND L42  
L51 1 S L50 AND L46  
L52 0 S L51 NOT L49

FILE 'CAPLUS' ENTERED AT 13:01:37 ON 12 NOV 2007

L53 3281 S BIODIESEL  
L54 21 S L53 AND TIN  
L55 13 S L54 AND ESTER

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 L19 0 S L18 NOT L9  
 L20 4 S L17 AND L10  
 L21 3 S L20 NOT L9  
 L22 4015 S L14 AND L5 AND L3  
 L23 901 S L14 AND L13 AND L3  
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 L49 1 S L48 AND L43  
 L50 23 S L48 AND L42  
 L51 1 S L50 AND L46  
 L52 0 S L51 NOT L49

FILE 'CAPLUS' ENTERED AT 13:01:37 ON 12 NOV 2007

L53 3281 S BIODIESEL

Serial N 10/585041

L54 21 S L53 AND TIN  
L55 13 S L54 AND ESTER